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## ANNUAL SUMMARY, 1892.

The present annual summary completes the discussion of the meteorology of India for the year 1892.

It should be noted that in the monthly reviews it is attempted to present the facts and data from two different points of view. Meteorological data in India are chiefly utilised for the following purposes:—

- 1st, in the discussion of the prevalence and spread of diseases, more especially of cholera and other diseases of an epidemic character;
- 2nd, in connection with agricultural questions, more especially the progress and character of the crops as determined by the weather conditions of the period.

India has hence been divided into two groups of divisions from what may be termed the medical and agricultural standpoints. For medical statistics India is arranged into the following provinces, which are believed to be fairly homogeneous so far as the conditions of the prevalence of the more common diseases are concerned:—

- (1) Burma Coast and Bay Islands.
- (2) Burma Inland.
- (3) Assam.
- (4) Bengal and Orissa.
- (5) Gangetic Plain and Chota Nagpur.
- (6) Upper Sub-Himalayas, including the sub-montane districts of the North-Western Provinces and the Punjab, and the North and Central Punjab.
- (7) Indus Valley and North-West Rajputana.
- (8) South-East Rajputana, Central India and Guzerat.
- (9) Deccan.
- (10) West Coast.
- (11) South India.

The data for each of these divisions are given in Table I in larger figures, and the portion of each monthly review entitled "Summary of the chief features of the weather in India during the month" is intended to give a sketch of the broader and more important features of the weather in India for the use of all those who study the relations between disease and weather in India.

According to the second method of arrangement into meteorological divisions or areas from the agricultural

standpoint, there are 52 divisions, each of which is fairly homogeneous so far as the distribution of rainfall and the general character of the crops and the conditions of their growth are concerned. The following gives the divisions arranged under the respective meteorological and political areas or provinces to which they belong:—

Political division or province.	Meteorological division.	Meteorological province.
BURMA . . . . .	Tenasserim . . . . .	} Burma Coast and Bay Islands.
	Lower Burma . . . . .	
	Arakan . . . . .	
BURMA . . . . .	Central Burma . . . . .	} Burma Inland.
	Upper Burma . . . . .	
ASSAM . . . . .	Assam (Surma) . . . . .	} Assam.
	" (Burmaputra) . . . . .	
BENGAL . . . . .	East Bengal . . . . .	} Bengal and Orissa.
	Deltaic Bengal . . . . .	
	Central Bengal . . . . .	
	North Bengal . . . . .	
	Orissa . . . . .	
BENGAL . . . . .	Chota Nagpur . . . . .	} Gangetic Plain and Chota Nagpur.
	Bihar, South . . . . .	
	" North . . . . .	
NORTH-WESTERN PROVINCES AND OUDH.	North-Western Provinces, East . . . . .	} Gangetic Plain and Chota Nagpur.
	Oudh, South . . . . .	
	" North . . . . .	
	North-Western Provinces Himalayas . . . . .	
PUNJAB . . . . .	North-West Provinces, Sub-montane . . . . .	} Upper Sub-Himalayas.
	Punjab, Central . . . . .	
	" Sub-montane . . . . .	
PUNJAB . . . . .	" North . . . . .	} Upper Sub-Himalayas.
	Punjab, West . . . . .	
RAJPUTANA . . . . .	Sind and Cutch . . . . .	} Indus Valley and North-West Rajputana.
	Rajputana, West . . . . .	
RAJPUTANA . . . . .	" East . . . . .	} Indus Valley and North-West Rajputana.
	Kattiawar . . . . .	
CENTRAL INDIA . . . . .	Central India . . . . .	} Indus Valley and North-West Rajputana.
BOMBAY . . . . .	Guzerat . . . . .	
NORTH-WESTERN PROVINCES.	North-Western Provinces, West . . . . .	} Indus Valley and North-West Rajputana.

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Political division or province.	Meteorological division.	Meteorological province.
BOMBAY . . . . .	Bombay Deccan . . . . .	Deccan.
BERAR . . . . .	Khandesh . . . . .	
CENTRAL PROVINCES.	Berar . . . . .	
	Central Provinces, West . . . . .	
HYDERABAD OR THE NIZAM'S DOMINIONS.	Central Provinces, East . . . . .	West coast.
	Hyderabad, North . . . . .	
BOMBAY . . . . .	Hyderabad, South . . . . .	South India.
	Konkan . . . . .	
MADRAS . . . . .	Malabar . . . . .	
	Madras, South . . . . .	
	South Central . . . . .	
	East Coast South Central . . . . .	
COORG AND MYSORE . . . . .	Central . . . . .	
	Madras, East Coast North . . . . .	
	Coorg, Mysore.	

The double grouping is shown in Plate I at the end of this part.

The data in Table I in the monthly reviews and in the present annual part are obtained, with a few exceptions, from the observations telegraphed daily to Simla for publication in the Daily Weather Report. In the case of thermometric observations they are telegraphed to the nearest half degree. Hence the maximum and minimum temperature data of the second class observatories derived from these telegraphic reports occasionally differ to some slight

extent from the means of the more exact data (recorded to tenths of a degree) tabulated in the observation forms sent into the Calcutta Office, and which are used in the calculation of the temperature data in Table II. There is also another reason why the mean maximum and minimum data in Tables I and II differ to a slight extent. In Table I the daily or 24 hours period is assumed to end at 8 A.M., and in Table II at 4 P.M., and hence the maximum temperature in Table I for any month of thirty-one days at any station gives the mean for thirty-one periods of 24 hours ending at 8 A.M., of the 31st, and in Table II for the same number of 24 hours ending at 4 P.M., on the 31st, and hence virtually of a monthly period one day in advance of the former. Similarly for months of 28, 29, or 30 days. These remarks will explain some of the slight discrepancies which may be found between the maxima and minima mean data in Tables I and II, and hence also in the monthly mean variation temperature data in the monthly reviews and annual summary. It may also be noted that the methods of exposure of the instruments at observatories in India, and of the reduction of the observations and the calculation of mean data, have been fully stated and explained in the Annual Reports on the meteorology of India, and need not be repeated. The reader is referred more especially to the Annual Report of the year 1885 for the fullest information on this subject.

### Temperature.

The methods of exposing the thermometers at observatories in India, and of deducing the daily and monthly means from the observed readings of the instruments, are described in pages 18-19 of the Annual Report for 1890.

The variations of the mean temperature of each month from the normal given in Table II of the monthly review are deduced by a comparison of the actual monthly means with the normal monthly means obtained by the same methods given in Table XII of average monthly temperatures of 88 stations in India and Ceylon, etc., in pages 19 to 22 of the Annual Report for the year 1890. Average data for 134 stations will also be found in pages 39 to 42 of the Annual Report for the year 1887. In Table I, published in each monthly review, as in the Daily Weather Report, the mean temperature of the day is calculated by the formula,

daily mean =  $\frac{\text{maximum} + \text{minimum}}{2}$ . It differs from the true daily mean by amounts varying slightly with the season. Variations of the daily or monthly means obtained by this method from normal daily or monthly means usually differ very little from those obtained by the more laborious cal-

culcation of true daily means and the comparison of these with normal true daily means. In Table I the variations of the monthly mean maximum and minimum temperature from the normal, as well as the variations of the monthly mean temperature (*i.e.*,  $\frac{\text{maximum} + \text{minimum}}{2}$ ) are given.

Normal monthly mean maximum and minimum temperature data for stations in India were given in the annual summary for 1891, and need not be repeated.

In Tables I and II of each of the monthly reviews for 1892 are given the variations of the mean temperature conditions of each station and of the eleven meteorological provinces from the normal temperature conditions of the month. The following table gives summaries of the temperature variation data for each month of the year 1892, and for the year. In the first table (Table I) the same division has been adopted as that employed in the Annual Reports from 1887 to 1890, and thus enables an exact comparison to be made of the temperature data of the year 1892 with those of previous years given in the Annual Reports. In the second set of tables (Tables II (a),

II (b), and II (c), the variation data are given for the eleven divisions or meteorological provinces into which the empire is divided, with the purpose, chiefly, of comparing meteorological and health statistics, and in the last table

(Table III) the data are given for the 52 smaller divisions or areas into which India is sub-divided, with a view to the comparison of meteorological and crop statistics.

TABLE I.—Geographical Summary of the temperature data of Table II in the 1892 monthly reviews.

DISRICT.	Number of stations.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North-West Himalaya	7-8	+4.7	+1.9	+5.1	+7.1	+4.7	-0.4	+0.5	+1.0	-0.3	-0.2	-0.8	-1.0	+1.9
Sikkim Himalaya and Nepal.	2-3	+1.8	+1.3	+1.4	+2.3	+1.5	-0.2	-0.1	-1.1	+1.0	-1.8	-1.7	-1.9	+0.2
Punjab Plains . . .	4	+3.8	+4.0	+5.7	+9.0	+5.8	+0.6	+1.1	-3.1	-0.9	+0.4	+0.6	+0.5	+2.3
Gangetic Plain . . .	9	+2.2	+2.4	+2.4	+4.3	+3.1	-0.5	-0.4	-2.0	-0.2	-0.1	-1.2	-1.0	+0.8
Western Rajputana . .	3	+2.3	+3.2	+3.3	+5.2	+1.6	+0.7	+0.6	+0.8	+0.8	+0.4	-0.9	-0.8	+1.4
Eastern Rajputana and Central India.	3-4	+2.6	+3.9	+2.2	+5.1	+1.3	-0.5	+0.9	-1.0	-1.5	-0.7	-0.5	-0.3	+1.0
Nerbudda Valley . . .	3	+2.3	+1.2	+0.7	+4.2	-0.1	-0.3	+0.9	+0.1	-0.9	+0.4	-1.5	+0.6	+0.6
Chota Nagpur . . .	1	+2.3	+1.5	+3.2	+4.4	+4.9	-1.1	-0.7	+0.5	+0.4	+0.8	-1.5	-0.7	+1.2
Lower Bengal . . .	4-5	+1.4	+2.2	+0.9	+0.8	+1.3	-0.4	-0.3	-0.4	0	+0.3	-2.0	-1.5	+0.2
Assam and Cachar . .	3-4	+2.7	+3.6	+1.3	+0.6	-0.6	+0.1	-0.3	-1.1	+1.5	-0.2	-0.4	+0.1	+0.6
Orissa and Sambalpur	3	+1.1	+1.3	-0.3	+1.9	+2.8	-1.0	-0.2	+0.6	-0.2	+0.6	-2.6	-1.6	+0.2
Central Provinces, South and Berar.	5-8	+2.1	+1.6	+1.6	+4.5	+1.6	+0.3	+1.2	+0.3	-1.3	+0.8	-1.4	-0.2	+0.9
Konkan . . .	3	+1.2	+1.8	+0.1	+2.5	+0.8	-0.4	+0.3	-1.0	-1.0	-0.4	-1.6	-0.5	+0.2
Malabar Coast . . .	1	-0.2	-0.1	-0.5	-2.6	-2.0	+1.1	-0.4	-0.9	-0.1	-0.8	+0.7	0	-0.5
Deccan, Hyderabad and Mysore.	6	+1.2	+1.3	+1.0	+1.4	+0.2	-0.2	+0.7	-0.8	-1.8	-0.4	-2.2	-0.3	0
East Coast and Carnatic.	4	+0.7	+1.5	+1.9	+1.0	+2.1	+0.3	-0.1	-1.3	-0.4	+0.1	+0.3	-0.6	+0.5
Arakan and Pegu . . .	4-5	+0.5	+1.5	-1.1	-0.6	-1.4	-0.5	-0.5	-0.8	-1.1	-1.1	-1.1	-2.6	-0.7
Tenasserim . . .	1	-3.2	-2.1	-3.2	-3.9	-4.9	-1.6	?	-1.9	?	?	?	?	?
Bay Islands . . .	1	+0.5	+1.7	+0.1	+0.3	-0.7	+0.4	-0.2	-0.1	+0.4	0	+0.1	+3.1	+0.5
Extra-Tropical . . .	44-47	+2.7	+2.5	+2.6	+4.3	+2.5	-0.3	+0.2	-0.7	-0.1	0	-1.1	-0.7	+1.0
Tropical . . .	25-29	+1.0	+1.3	+0.6	+1.6	+0.4	0	+0.4	-0.6	-1.1	-0.1	-1.2	-0.7	+0.1
Whole of India . . .	69-76	+2.0	+2.0	+1.8	+3.2	+1.8	-0.2	+0.3	-0.6	-0.5	-0.1	-1.1	-0.7	+0.7

TABLE II(a).—Variation of the mean monthly maximum temperature from the normal in 1892 in the eleven meteorological provinces of India.

METEOROLOGICAL PROVINCE.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
	0	0	0	0	0	0	0	0	0	0	0	0	0
Burma Coast and Bay Islands	-0.3	+1.0	-0.6	-0.3	-1.7	+0.1	+0.1	+0.9	-0.4	-0.2	-0.5	-2.1	-0.3
Burma Inland . . .	+1.0	+0.8	-0.5	-1.9	-0.7	+0.2	-0.3	-0.3	-0.2	+0.2	+1.9	+0.2	0
Assam . . .	+1.7	+1.8	+2.3	-0.8	-2.8	-0.4	-1.4	-2.0	+1.1	-0.8	-0.6	-0.6	-0.2
Bengal and Orissa . . .	+2.6	+2.5	+2.4	-0.6	+1.7	-0.6	-0.4	+0.2	+0.3	-0.1	-1.6	-0.8	+0.5
Gangetic Plain and Chota Nagpur.	+2.6	+2.0	+2.5	+1.5	+2.7	-1.9	-0.2	-1.4	+0.1	+1.0	+0.3	-0.3	+0.7
Upper Sub-Himalayas . . .	+2.8	+1.8	+5.1	+7.1	+2.8	-1.0	+0.6	-4.4	-2.6	-1.5	-0.8	-2.0	+0.7
Indus Valley and North-West Rajputana.	+2.4	+3.7	+6.9	+8.5	+3.5	+0.3	+0.2	-2.9	+0.4	-0.1	0	-1.5	+1.8
East Rajputana, Central India and Guzerat.	+2.1	+2.7	+3.8	+5.1	-0.3	+0.1	+2.3	-0.4	-2.6	-1.5	+0.4	-0.5	+0.9
Deccan . . .	+2.2	+1.0	+1.7	+3.3	+0.7	+0.2	+1.4	-0.6	-2.3	-1.1	-0.3	+1.1	+0.6
West Coast . . .	+1.8	+1.5	+0.2	+0.8	+0.1	-0.3	+0.1	-1.3	-0.9	-1.1	-0.5	+0.2	+0.1
South India . . .	+0.7	+0.6	+1.8	+0.8	+1.5	-0.2	-0.9	-2.1	-1.5	-0.3	+1.4	+1.1	+0.2

TABLE II (b).—Variation of the mean monthly minimum temperature from the normal in 1892 in the eleven meteorological provinces of India.

METEOROLOGICAL PROVINCE.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
Burma Coast and Bay Islands.	-1.4	+0.3	-1.7	+0.3	-0.8	+0.2	+0.1	0	-0.5	-0.6	+0.4	-2.8	-0.5
Burma Inland . . . . .	-4.1	0	-1.3	+2.1	+0.9	-0.1	-0.2	-0.4	-0.4	-1.6	-1.5	-4.8	-1.0
Assam . . . . .	+1.1	+2.7	-0.6	+1.7	+0.4	0	-0.1	-0.5	+1.1	-0.5	-0.7	-0.3	+0.4
Bengal and Orissa . . . . .	+0.4	+3.0	-0.8	+2.3	+1.9	-0.2	0	-0.1	0	+0.2	-2.6	-2.3	+0.2
Gangetic Plain and Chota Nagpur.	+1.0	+2.8	-0.2	+3.5	+2.5	-0.1	-0.3	-0.9	+0.4	-0.6	-1.7	-1.4	+0.4
Upper Sub-Himalayas . . . . .	+0.9	+2.2	+1.0	+4.5	+4.2	+0.3	+0.5	-1.3	0	-1.8	-0.1	-0.1	+0.9
Indus Valley and North-West Rajputana.	+1.8	+3.3	+2.3	+5.3	+3.4	+0.4	+0.6	0	+0.2	-0.8	+0.7	+0.5	+1.5
East Rajputana, Central India and Guzerat.	+3.2	+3.5	+0.9	+5.2	+1.6	+0.4	+1.5	+0.6	+0.8	-0.9	-1.1	+0.6	+1.4
Deccan . . . . .	+2.4	+1.8	-0.8	+4.1	+1.2	0	+0.8	+0.3	-0.1	+1.6	-2.3	+1.2	+0.9
West Coast . . . . .	0	+1.1	0	+1.4	-0.2	+0.3	+0.6	-0.8	-0.1	-0.2	-1.6	-0.6	0
South India . . . . .	+0.2	+1.4	+0.6	+1.6	+1.1	+0.4	+0.2	-0.6	-0.6	-0.2	-1.5	-0.9	+0.1

TABLE II (c).—Variation of the mean monthly temperature from the normal in 1892 of the eleven meteorological provinces of India.

METEOROLOGICAL PROVINCE.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
Burma Coast and Bay Islands.	-0.9	+0.6	-1.2	0	-1.3	+0.1	+0.1	+0.5	-0.6	-0.4	0	-2.5	-0.5
Burma Inland . . . . .	-1.6	+0.4	-0.9	+0.1	+0.1	+0.1	-0.3	-0.4	-0.3	-0.7	+0.2	-2.3	-0.5
Assam . . . . .	+1.4	+2.3	+0.9	+0.4	-1.3	-0.2	-0.8	-1.2	+1.1	-0.6	-0.7	-0.5	+0.1
Bengal and Orissa . . . . .	+1.5	+2.8	+0.8	+0.7	+1.8	-0.4	-0.2	0	+0.2	0	-2.2	-1.6	+0.3
Gangetic Plain and Chota Nagpur.	+1.8	+2.4	+1.2	+2.6	+2.7	-1.0	-0.3	-1.2	+0.2	+0.2	-0.7	-0.9	+0.6
Upper Sub-Himalayas . . . . .	+1.8	+2.0	+3.1	+5.8	+3.5	-0.3	+0.6	-2.9	-1.4	-1.7	-0.5	-1.1	+0.7
Indus Valley and North-West Rajputana.	+2.1	+3.5	+4.5	+6.9	+3.5	+0.4	+0.4	-1.5	+0.3	-0.5	+0.3	-0.5	+1.6
East Rajputana, Central India and Guzerat.	+2.7	+3.1	+2.4	+5.2	+0.7	+0.3	+1.9	+0.1	-0.9	-1.2	-0.4	+0.1	+1.2
Deccan . . . . .	+2.3	+1.4	+0.4	+3.7	+1.0	+0.1	+1.1	-0.2	-1.2	+0.2	-1.4	+1.1	+0.7
West Coast . . . . .	+0.9	+1.3	+0.1	+1.1	0	0	+0.3	-1.1	-0.5	-0.7	-1.0	-0.2	0
South India . . . . .	+0.5	+1.0	+1.2	+1.2	+1.3	+0.1	-0.3	-1.4	-1.0	-0.3	0	+0.1	+0.2

TABLE III.—Variation of the mean monthly temperature from the normal in 1892 of 49 meteorological divisions in India.

METEOROLOGICAL DISTRICT OR DIVISION.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Mean variation of year.
Tenasserim . . . . .	-1.1	+1.1	-0.4	-0.4	-1.5	+0.8	+0.6	+1.3	-0.1	0	+0.9	-2.2	-0.1
Lower Burma . . . . .	-0.8	+0.6	-1.2	-0.3	-1.7	+0.2	0	+0.4	-0.8	-0.3	0	-2.5	-0.5
Arakan . . . . .	-1.0	-0.4	-2.5	-0.2	-0.1	-1.2	-0.8	-0.8	-1.2	-1.6	-1.8	-3.1	-1.2
Central Burma . . . . .	-1.6	+0.4	-0.9	-0.1	+0.1	+0.1	-0.3	-0.4	-0.3	-0.7	+0.2	-2.3	-0.5
Assam, Surma . . . . .	+1.1	+2.1	+1.2	-0.7	-0.1	+0.4	-0.3	-1.3	+0.2	-1.3	-1.0	-0.8	0
"    Brahmaputra . . . . .	+1.6	+2.4	+0.7	-1.0	-1.9	-0.5	-1.0	-1.2	+1.6	-0.3	-0.6	-0.3	0
East Bengal . . . . .	+2.0	+3.2	+1.1	-0.7	+0.9	+0.4	-0.2	0	+0.4	-0.6	-2.2	-1.6	+0.2
Deltaic " . . . . .	+0.7	+2.1	0	+0.2	+1.8	-0.8	-0.2	-0.2	0	0	-2.5	-2.1	-0.1
Central " . . . . .	+1.6	+2.8	+1.5	+1.5	+3.2	-0.3	-0.2	+0.2	+0.7	+0.5	-1.2	-0.9	+0.8
North " . . . . .	+2.3	+4.2	+0.9	?	?	?	?	?	?	?	?	?	+2.5
Orissa . . . . .	+1.2	+1.9	+0.4	+0.5	+2.4	-1.2	-0.3	+0.3	-0.5	+0.4	-2.6	-1.4	+0.1
Chota Nagpur . . . . .	+2.5	+2.3	+1.6	+3.5	+5.0	-1.5	0	+0.8	+0.3	+0.4	-0.8	-0.1	+1.2
Bihar, South . . . . .	+1.8	+2.4	+1.6	+2.7	+3.2	-0.8	-0.7	-1.3	-0.3	+0.6	-0.5	-0.5	+0.7
"    North . . . . .	+1.1	+2.6	-0.2	+0.2	+0.7	-1.1	-1.1	-1.5	+0.9	-0.2	-1.4	-1.8	-0.2

TABLE III.—Variation of the mean monthly temperature from the normal in 1892, etc.—concluded.

METEOROLOGICAL DISTRICT OR DIVISION.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Mean variation of year.
N.-W. Provinces (Eastern Districts).	+2.1	+2.8	+1.3	+3.4	+3.2	-1.1	+0.8	-0.6	+0.4	+0.6	-0.5	-0.4	+1.0
N.-W. Provinces (East submontane).	+1.2	+1.9	+1.2	+1.8	+1.5	-1.7	-1.2	-2.5	-0.1	-0.5	-0.8	-1.6	-0.1
Oudh, South . . . . .	+2.4	+2.2	+1.9	+3.1	+3.5	-0.1	+0.9	-1.7	-0.1	-0.4	0	-0.9	+0.9
N.-W. Provinces (submontane)	+2.9	+1.4	+1.8	+4.6	+3.4	-1.1	+0.4	-2.7	-0.6	-1.6	-1.0	-0.8	+0.6
Punjab, Central . . . . .	+1.4	+2.2	+3.3	+5.8	+3.7	+0.8	+0.9	-3.0	-1.7	-1.6	-0.2	-1.3	+0.9
" Submontane . . . . .	+2.2	+2.4	+3.7	+7.3	+4.1	+0.5	+0.3	-4.1	-3.0	-2.7	-0.3	-1.6	+0.7
" North . . . . .	+2.0	+2.7	+4.5	+7.0	+3.2	-1.3	+0.2	-2.5	-1.3	-1.4	0	-1.1	+1.0
" West . . . . .	+2.9	+3.8	+5.4	+8.3	+4.9	+0.5	+0.4	-3.1	-0.9	-0.8	+0.9	-0.1	+1.9
Sind and Cutch . . . . .	+1.1	+3.1	+3.4	+5.1	+1.6	+0.2	+0.3	+0.6	+1.8	0	-0.4	-1.1	+1.3
Rajputana East . . . . .	+3.5	+4.3	+3.6	+6.4	+0.9	+1.4	+2.3	+0.1	-1.1	-1.9	-0.2	-0.4	+1.6
Kathiawar . . . . .	+2.0	+2.2	+0.9	+3.7	-1.5	+0.6	+1.4	-0.2	-1.2	-1.5	-2.1	-0.9	+0.3
Central India . . . . .	+1.9	+1.9	+0.8	+4.3	-0.1	-0.7	+1.7	+0.4	-1.1	-0.8	-1.1	+0.7	+0.7
Guzerat . . . . .	+3.2	+3.0	+1.7	+3.6	+0.6	-1.4	+1.4	+0.7	-1.1	+0.8	-1.5	+0.7	+1.0
N.-W. Provinces West . . . . .	+2.2	+3.3	+3.7	+5.6	+2.7	0	+1.1	-0.2	-0.2	-1.4	+1.4	+0.3	+1.5
Bombay Deccan . . . . .	+1.8	+0.9	+0.4	+2.2	+0.4	-0.5	+1.0	-0.2	-1.6	-0.2	-2.7	+0.1	+1.0
Khandesh . . . . .	+2.4	+0.9	+0.7	+5.1	+0.2	-0.1	+2.8	+0.2	-1.8	+1.0	-1.8	+3.0	+1.1
Berar . . . . .	+3.2	+2.5	+0.8	+5.2	+0.2	+1.0	+1.8	-0.4	-2.0	+1.2	-1.6	+1.7	+1.1
Central Provinces, West . . . . .	+2.4	+1.1	+0.7	+4.4	+0.4	+0.4	+1.3	-0.3	-1.4	+0.1	-1.4	+1.7	+0.8
" " Central . . . . .	+2.5	+1.5	-0.3	+3.2	+1.0	+0.6	+0.9	0	-0.4	+0.2	-0.5	+1.6	+0.9
" " East . . . . .	+2.2	+1.8	-0.3	+3.8	+3.0	-1.1	+0.1	0	-0.6	+0.4	-0.6	-0.3	+0.7
Hyderabad, South . . . . .	+1.3	+1.0	+1.2	+2.9	+2.8	-0.3	?	-0.7	-1.5	-0.5	-1.9	+0.1	+0.4
Konkan . . . . .	+0.9	+1.8	0	+2.5	+1.0	-0.6	+0.5	-1.0	-0.9	-0.5	-1.8	-0.2	+0.1
Malabar . . . . .	+1.0	+0.5	+0.2	+1.0	+1.6	+0.9	+0.1	-1.3	+0.1	-0.7	+0.1	-0.2	+0.3
Madras, South . . . . .	-0.1	+0.8	+1.3	+0.3	+0.4	-0.4	-1.5	-2.7	-0.5	-1.0	+0.6	-0.6	-0.3
" South Central . . . . .	+1.5	+2.3	+1.7	+0.5	-0.4	+1.2	-0.4	+0.6	+0.5	+2.2	+1.2	+1.2	+0.9
Coorg . . . . .	+1.2	+1.3	+1.1	+0.2	-1.0	+1.3	-0.2	-1.0	-1.7	-0.1	+0.2	-0.3	+0.1
Mysore . . . . .	+0.9	+1.7	+2.3	+0.4	-0.3	+1.4	?	-1.2	-1.4	+0.3	+0.2	+0.7	+0.5
Madras, East Coast South . . . . .	+0.3	+1.0	+1.4	+2.0	+2.9	-0.2	-0.7	-1.7	-0.4	0	+0.5	+0.6	+0.5
" " Central . . . . .	+0.4	-0.2	+0.3	+2.4	+3.8	-2.1	+0.2	-1.9	-1.8	-2.2	-1.5	-0.9	-0.2
" " Central . . . . .	+0.2	+0.7	+0.6	+1.1	+1.0	-1.0	-0.5	-2.4	-3.6	-1.3	-3.4	-1.1	-0.8
" East Coast North . . . . .	+0.2	+0.1	+0.5	+1.3	+2.4	-0.1	+1.3	-0.8	-1.5	-0.2	-2.7	-0.9	0
Baluchistan . . . . .	+2.6	+3.4	+3.7	+4.7	+1.3	-2.6	+0.2	-0.1	-4.3	-0.6	-0.1	-1.6	+0.6
Hill Stations, Northern India . . . . .	+2.8	+1.7	+3.1	+5.3	+4.0	+0.4	+0.3	-1.3	+0.1	-0.9	-1.0	-0.8	+1.1
" " Central India . . . . .	+2.6	+1.5	+1.6	+4.2	-1.6	+0.7	+1.2	+0.5	-1.1	-1.6	-1.7	+0.4	+0.6
" " South India . . . . .	+0.6	+1.5	+0.7	+0.3	-0.4	-0.6	-1.0	-0.8	-0.2	-0.5	-0.5	-1.0	-0.2

In the following discussion of the meteorology of India in 1892 the year is divided into four seasons according to the following arrangement:—

1st.—The cold weather period including the months of January and February.

2nd.—The hot weather period including the months of March, April and May.

3rd.—The period of the south-west monsoon rains proper, including the months of June, July, August and September.

4th.—The period of the retreating south-west monsoon rains, including the months of October, November and December.

The temperature conditions of the year were even more noteworthy than those of the preceding year.

**I. The Cold Weather period.**—The months of January and February were unusually free from large cold weather disturbances, and the rainfall was abnormally small in amount. The deficiency in the precipitation was even more marked in the hill districts of Northern India than on the plains.

Several depressions crossed Northern India during this period. Each of these storms was preceded by a warm wave and followed by a cool wave. The temperature changes were, however, generally smaller than usually accompany these storms. The largest temperature changes occurred in connection with the storms of the 9th to the 15th January, and the 21st to the 23rd January. In the latter storm the temperature was 15° to 20° lower in the rear than in the front of the depression.

A large and noteworthy decrease of temperature occurred during the last week of February over the whole of Northern India. This cold wave followed a heavy local fall of snow in the higher elevations of Afghanistan. Data of this cold wave are given in page 48 of the February Review. They show that the cool wave was transmitted eastwards from the North-West frontier across Northern India at the rate of about 400 miles per diem.

In consequence of the unusual absence of cold weather storms, and of the very slight snowfall in the Himalayan and Afghan mountain districts, the mean temperature of the period was more or less considerably in excess. The

following gives the more striking features of the temperature conditions of the period :—

1st.—The mean maximum or day temperature was considerably above the normal throughout the period, as is shown by the following table :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN MAXIMUM TEMPERATURE IN		Average variation of period.
	January 1892.	February 1892.	
	o	o	o
Punjab . . . . .	+3'1	+3'0	+3'1
North-Western Provinces . . . . .	+2'2	+1'4	+1'8
Rajputana . . . . .	+2'7	+3'9	+3'3
Central India . . . . .	+1'4	+2'0	+1'7
Bihar and Chota Nagpur . . . . .	+3'0	+2'3	+2'7
Bengal and Orissa . . . . .	+2'6	+2'5	+2'6
Assam . . . . .	+1'7	+1'8	+1'8

The excess was hence very uniform in the whole of Northern and Central India in the month of January. It was greatest in the Punjab and Rajputana in February.

2nd.—The mean minimum or night temperature was as largely above the normal as the day temperature. The following table gives data :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN MINIMUM TEMPERATURE IN		Average variation of period.
	January 1892.	February 1892.	
	o	o	o
Punjab . . . . .	+1'4	+3'0	+2'2
North-Western Provinces . . . . .	+1'8	+3'0	+2'4
Rajputana . . . . .	+4'3	+4'6	+4'5
Central India . . . . .	+2'4	+1'7	+2'1
Bihar and Chota Nagpur . . . . .	+0'4	+2'4	+1'4
Bengal and Orissa . . . . .	+0'4	+3'0	+1'7
Assam . . . . .	+1'1	+2'7	+1'9

3rd.—The mean monthly temperature was in moderate excess during the period over the whole of Northern and Central India :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN MONTHLY TEMPERATURE IN		Average variation of period.
	January, 1892.	February, 1892.	
	o	o	o
Punjab . . . . .	+2'3	+3'0	+2'7
North-Western Provinces . . . . .	+2'0	+2'2	+2'1
Rajputana . . . . .	+3'5	+4'3	+3'9
Central India . . . . .	+1'9	+1'9	+1'9
Bihar and Chota Nagpur . . . . .	+1'7	+2'4	+2'1
Bengal and Orissa . . . . .	+1'5	+2'8	+2'2
Assam . . . . .	+1'4	+2'3	+1'9

4th.—The increased temperature both by day and

night was even more strongly shown at the hill than at the plain stations :—

MONTH.	STATION.	VARIATION FROM NORMAL OF MEAN		
		Maximum temperature.	Minimum temperature.	Monthly temperature.
JANUARY 1892.	Quetta . . . . .	+2'7	+2'4	+2'6
	Murree . . . . .	+5'0	+2'1	+3'6
	Ranikhet . . . . .	+4'6	+3'7	+4'2
	Pachmarhi . . . . .	+2'9	+3'2	+3'1
	Mount Abu . . . . .	+1'0	+2'9	+2'0
FEBRUARY 1892.	Quetta . . . . .	+4'9	+1'8	+3'4
	Murree . . . . .	+3'5	+1'5	+2'5
	Ranikhet . . . . .	+1'2	+1'4	+1'3
	Pachmarhi . . . . .	+1'0	+1'6	+1'3
	Mount Abu . . . . .	+0'2	+3'0	+1'9

Temperature was hence during this period above the normal to a moderate extent, the increase being almost as marked in the night as in the day temperature. The excess was slightly larger at the hill than the plain stations. This general elevation of temperature was due to the prevalence of less disturbed weather than usual and the absence of large cold weather storms, and hence the increase was very uniform over the whole of Northern and Central India, to which the temperature effects of the cold weather storms are generally restricted. Temperature was in moderate excess in the preceding December in North-Eastern India and the Deccan, and in slight defect in the Central Provinces, Central India, the North-Western Provinces and the East Punjab, and was normal in Sind and Rajputana. The temperature features of the period under discussion were hence local and conditioned by the general meteorological features of the period in India.

II. *The hot weather period*—In consequence of the abnormal conditions of the preceding cold weather period, the hot weather commenced earlier than usual in Central and Northern India, and was more intense, more especially in the months of March and April. The following gives the more important features of the temperature conditions of this period :—

(a). The mean maximum or day temperature was largely in excess throughout the whole period from March to May :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN MAXIMUM TEMPERATURE IN			Average variation of period.
	March 1892.	April 1892.	May 1892.	
Punjab . . . . .	+6'8	+9'3	+3'8	+6'6
North-Western Provinces . . . . .	+3'5	+3'9	+2'5	+3'3
Sind and Rajputana . . . . .	+5'4	+6'3	+0'3	+4'0
Central India . . . . .	+2'3	+3'9	—0'6	+1'9
Central Provinces and Berar . . . . .	+1'6	+3'9	+0'6	+2'0
Bihar and Chota Nagpur . . . . .	+2'3	+1'0	+2'7	+2'0
Bengal and Orissa . . . . .	+2'4	—0'6	+1'7	+1'2
Assam . . . . .	+2'3	—0'8	—2'8	—0'4
Burma . . . . .	—0'6	—0'6	—1'5	—0'9
Bombay . . . . .	+1'0	+1'4	+0'1	+0'8
Madras . . . . .	+1'8	+0'8	+1'5	+1'4

The most remarkable feature was the very large excess in North-Western India and more especially in the Indus Valley, for which special data are given in the following table :—

STATION.	VARIATION FROM NORMAL OF MAXIMUM TEMPERATURE IN			Average variation of period.
	March 1892.	April 1892.	May 1892.	
	°	°	°	°
Peshawar . . . . .	+6.0	+11.3	+6.6	+8.0
Dera Ismail Khan . . . . .	+8.4	+11.3	+6.0	+8.6
Mooltan . . . . .	+7.6	+10.3	+6.5	+8.1
Jacobabad . . . . .	+7.4	+8.4	+3.8	+6.5
Hyderabad . . . . .	+5.4	+5.9	-0.2	+3.7

This feature hence reached its maximum in April in the Indus Valley, where the hot weather of 1892 was one of the most trying on record. Higher day temperatures were registered at many stations in the interior of India during the months of March and April than have been previously recorded. Data illustrating this feature are given in pages 82 and 119 in the March and April reviews. The increasing influence of the sea winds in May moderated the intensity of the hot weather to some slight extent in that month, the effect being greatest in the coast districts and the Peninsula and least in Upper India.

(b) The mean minimum temperature was generally above the normal but to a smaller extent than the day temperature.

The following gives mean data for the larger political divisions in India :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN MINIMUM TEMPERATURE IN			Average variation of period.
	March 1892.	April 1892.	May 1892.	
	°	°	°	°
Punjab . . . . .	+2.3	+5.3	+4.5	+4.0
North-Western Provinces . . . . .	+0.5	+4.1	+3.4	+2.7
Sind and Rajputana . . . . .	+1.6	+5.3	+2.1	+3.0
Central India . . . . .	-0.8	+4.6	+0.3	+1.4
Central Provinces . . . . .	-0.9	+4.2	+1.4	+1.6
Bihar and Chota Nagpur . . . . .	-0.3	+3.3	+2.3	+1.8
Bengal and Orissa . . . . .	-0.8	+2.3	+1.9	+1.1
Assam . . . . .	-0.6	+1.7	+0.4	+0.5
Burma . . . . .	-1.6	+0.6	-0.5	-0.5
Bombay . . . . .	-0.2	+2.8	+0.2	+0.9
Madras . . . . .	+0.6	+1.6	+1.1	+1.1

A comparison of this table with the preceding shows that the excess in the night temperature was greatest under the same conditions as the day temperature. It was in fact greatest in the Indus Valley in April. The

following gives data for those stations at which the excess was on the whole greatest :—

STATION.	VARIATION FROM NORMAL OF MINIMUM TEMPERATURE IN			Average variation of period.
	March 1892.	April 1892.	May 1892.	
	°	°	°	°
Peshawar . . . . .	+3.8	+6.4	+3.8	+4.7
Dera Ismail Khan . . . . .	+1.9	+5.9	+3.7	+3.8
Mooltan . . . . .	+3.3	+7.1	+5.2	+5.2

(c) The mean temperature of the period was hence more or less considerably above the normal during the whole period, the excess being greatest in the month of April, and in the Indus Valley.

The following gives data :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN MONTHLY TEMPERATURE IN			Average variation of period.
	March 1892.	April 1892.	May 1892.	
	°	°	°	°
Punjab . . . . .	+4.6	+7.3	+4.2	+5.4
North-Western Provinces . . . . .	+2.0	+4.0	+3.0	+3.0
Sind and Rajputana . . . . .	+3.5	+5.8	+1.2	+3.5
Central India . . . . .	+0.8	+4.3	-0.2	+1.6
Central Provinces . . . . .	+0.4	+4.1	+1.0	+1.8
Behar and Chota Nagpur . . . . .	+1.0	+2.2	+2.5	+1.9
Bengal and Orissa . . . . .	+0.8	+0.9	+1.8	+1.2
Assam . . . . .	+0.9	+0.5	-1.2	+0.1
Burma . . . . .	-1.1	0	-1.0	-0.7
Bombay . . . . .	+0.4	+2.1	+0.2	+0.9
Madras . . . . .	+1.2	+1.2	+1.3	+1.2

(d) The variations of the temperature conditions were as large in amount at the hill stations as at the neighbouring plain stations. The maximum or day temperature was somewhat more largely in excess at these stations than the minimum.

The following table gives the variations of the mean monthly temperature from the normal during the period at five hill stations :—

STATION.	VARIATION FROM NORMAL OF MEAN MONTHLY TEMPERATURE IN			Average variation of period.
	March 1892.	April 1892.	May 1892.	
	°	°	°	°
Murree . . . . .	+4.0	+8.9	+4.6	+5.8
Ranikhet . . . . .	+5.5	+5.7	+5.0	+5.4
Darjeeling . . . . .	-0.3	+1.4	+1.7	+0.9
Mount Abu . . . . .	+3.0	+4.2	-3.8	+1.1
Pachmarhi . . . . .	+0.2	+4.1	+0.7	+1.7

The highest day temperatures of the year were registered slightly earlier than usual in May on the 20th, 21st

and 22nd. The following table gives data for three stations at which the highest maxima were recorded :—

STATION.	Date.	Actual maximum of 24 hours preceding 8 A.M. of date.	Highest recorded maximum temperature in May previous to 1892.	VARIATION FROM NORMAL OF		
				Maximum temperature.	Minimum temperature.	Mean temperature.
Jacobabad . . . . .	22nd	121°0	123°0	+ 11°2	- 0°1	+ 5°6
D. I. Khan . . . . .	21st	119°5	119°0	+ 15°9	+ 21°0	+ 18°5
Khushab . . . . .	21st	119°1	?	?	?	?

The highest mean temperatures of the day recorded during this period were the following :—

STATION.	Date.	The highest mean daily temperature.
Jacobabad . . . . .	23rd	104°8
Dera Ismail Khan . . . . .	22nd	102°7
Raipur . . . . .	22nd	102°3
Nagpur . . . . .	21st	101°9

**III. The south-west monsoon period.**—The first large advances of the monsoon currents occurred somewhat earlier than usual in the Bay of Bengal and Arabian Sea. They were accompanied in both sea areas by the formation of cyclonic storms. General rainfall commenced in the Bombay coast districts on the 2nd and 3rd of June, and extended rapidly over the interior to the South-East Punjab during the next five days. The storm in the Bay of Bengal crossed the Orissa coast on the 10th, and advanced into the North-Western Provinces where it filled up on the 13th. During the next four days both currents fell off in strength, and dry land winds set in again over the greater part of the interior. Light showers continued to be received in Burma, Bengal and the Peninsula. Temperature hence increased very rapidly again in the interior, and was excessive during the last ten days of the month, more especially in those districts which usually receive general rain during the latter half of June. These conditions continued until the 29th, when the currents strengthened slightly and rainfall became somewhat more general over the interior. The 27th was the hottest day during this period. The following gives temperature data for that day :—

PROVINCE.	VARIATION OF		
	Mean maximum from normal.	Mean minimum from normal.	Mean from normal.
Burma . . . . .	- 0°1	+ 0°7	+ 0°3
Bengal and Assam . . . . .	- 0°3	- 0°8	- 0°6
North-Western Provinces . . . . .	+ 8°5	+ 6°0	+ 7°3
Punjab . . . . .	+ 8°1	+ 4°9	+ 5°5
Sind and Rajputana . . . . .	+ 2°6	+ 0°4	+ 1°5
Guzerat and Central India . . . . .	+ 6°4	+ 3°3	+ 4°9
Central Provinces . . . . .	+ 6°7	+ 3°7	+ 5°2
Bombay . . . . .	+ 3°6	+ 1°5	+ 2°6
Madras . . . . .	+ 0°4	+ 0°3	+ 0°4

The Central Punjab, was the hottest area during this period. The highest temperatures registered on that day were 117°1° at Khushab, 115°9 at Sialkot and 115°5 at Dera Ismail Khan.

The Bombay current strengthened rapidly on the 6th and 7th July, and blew with unusual steadiness during that month and the months of August and September. Both currents withdrew from Upper India on the 25th and 26th September, and at the end of September rainfall was confined to Burma and Bengal and the Peninsula.

The chief features of the temperature conditions during this period were hence excessive temperature over the greater part of the interior in the month of June and lower temperature than usual in the months of July, August and September, the deficiency being large in those districts of North-Western India which received abnormally heavy rain during these months.

The following monthly variation data for the larger provinces illustrate the chief temperature features of the period :—

PROVINCE.	VARIATION FROM NORMAL OF MEAN MAXIMUM TEMPERATURE IN				Average variation of period.
	June 1892.	July 1892.	August 1892.	September 1892.	
Burma . . . . .	0	0	0	0	0
Assam . . . . .	+ 0°1	+ 0°1	+ 0°7	- 0°4	+ 0°1
Bengal and Orissa . . . . .	- 0°4	- 1°4	- 2°0	+ 1°1	- 0°7
Behar and Chota Nagpur . . . . .	- 0°6	- 0°4	+ 0°2	+ 0°3	- 0°1
North-Western Provinces . . . . .	- 2°2	- 1°0	- 0°9	+ 0°2	- 1°0
Punjab . . . . .	- 1°1	+ 0°9	- 2°2	- 0°9	- 0°8
Sind and Rajputana . . . . .	0	+ 0°1	- 5°0	- 2°5	- 1°9
Central India . . . . .	+ 0°9	+ 1°6	- 0°6	- 0°7	+ 0°3
Berar and Central Provinces . . . . .	+ 1°1	+ 2°4	+ 0°2	- 2°5	+ 0°3
Madras . . . . .	+ 0°5	+ 1°2	- 0°4	- 1°9	- 0°2
Bombay . . . . .	- 0°2	- 0°9	- 2°1	- 1°5	- 1°2
Bombay . . . . .	- 0°6	+ 1°0	- 0°8	- 1°8	- 0°5

PROVINCE.	VARIATION FROM NORMAL OF MEAN MINIMUM TEMPERATURE IN				Average variation of period.
	June 1892.	July 1892.	August 1892.	September 1892.	
Burma . . . . .	0	0	0	0	0
Assam . . . . .	+ 0°1	0	0	- 0°5	- 0°1
Bengal and Orissa . . . . .	0	- 0°1	- 0°5	+ 1°1	+ 0°1
Behar and Chota Nagpur . . . . .	- 0°2	0	- 0°1	0	- 0°1
North-Western Provinces . . . . .	+ 0°2	- 0°4	- 0°9	+ 0°4	- 0°2
Punjab . . . . .	- 0°3	+ 0°1	- 1°0	+ 0°5	- 0°2
Sind and Rajputana . . . . .	+ 1°1	+ 0°7	- 1°1	- 0°2	+ 0°1
Central India . . . . .	+ 0°9	+ 1°4	+ 1°2	+ 1°0	+ 1°1
Berar and Central Provinces . . . . .	- 0°7	+ 0°9	+ 0°6	+ 0°4	+ 0°3
Madras . . . . .	0	+ 0°7	+ 0°2	+ 0°1	+ 0°3
Bombay . . . . .	+ 0°4	+ 0°2	- 0°6	- 0°6	- 0°2
Bombay . . . . .	0	+ 0°8	- 0°2	- 0°2	+ 0°1

PROVINCE.	VARIATION FROM NORMAL OF MEAN MONTHLY TEMPERATURE IN				Average variation of period.
	June 1892.	July 1892.	August 1892.	September 1892.	
	o	o	o	o	o
Burma . . . . .	+0.1	+0.1	+0.4	-0.5	o
Assam . . . . .	-0.2	-0.8	-1.2	+1.1	-0.3
Bengal and Orissa . . . . .	-0.4	-0.2	o	+0.2	-0.1
Bihar and Chota Nagpur . . . . .	-1.0	-0.7	-0.9	+0.3	-0.6
North-Western Provinces . . . . .	-0.7	+0.5	-1.6	-0.2	-0.5
Punjab . . . . .	+0.6	+0.4	-3.1	-1.4	-0.9
Sind and Rajputana . . . . .	+0.9	+1.5	+0.3	+0.2	+0.7
Central India . . . . .	+0.2	+1.7	+0.4	-1.1	+0.3
Berar and Central Provinces . . . . .	+0.3	+1.0	-0.1	-0.9	+0.1
Madras . . . . .	+0.1	-0.3	-1.4	-1.0	-0.7
Bombay . . . . .	-0.3	+0.9	-0.5	-1.0	-0.2

**IV. The retreating south-west monsoon period.**

—The temperature conditions of this period were in part determined by the distribution of rainfall in the preceding months of August and September, as well as during the period itself, but chiefly by the occurrence of very unusual conditions in Central Asia and China. The pressure conditions in India itself in October and November differed to a comparatively small extent from the normal, and were such as are usually associated with an abnormal distribution of the retreating south-west monsoon rainfall which was given more largely than usual to the south-east of the Bay in November and withheld from Madras. Abnormally strong north-east winds set in over the Gulf of Siam, Tenassarim and the Andaman Sea in the beginning of the fourth week of November, and north-east winds extended over the whole of the Bay area in the first week of December. The south-west humid currents hence retreated from the south of the Bay at least three weeks earlier than usual. This early establishment of a strong north-east monsoon was, as is shown below, associated with very abnormal temperature conditions, more especially in Burma and the Himalayan Hill Districts.

The following gives the more important features of the period, month by month :—

- (1) The temperature conditions of the month of October differed little from the normal, and the only marked feature was a moderate deficiency in the area which had received abnormally heavy rainfall in August and September, viz., Central Rajputana and the adjacent districts of the North-Western Provinces where the mean temperature of the month was from 2° to 3° below the normal.
- (2) Temperature was generally below the normal in November. It was in slight excess in Lower Burma and in slight to moderate excess in the area of drought in Southern India. The only large and important feature was deficient temperature in two areas, viz., Lower Bengal and

Orissa, and the Deccan. The following gives data for representative stations in these two areas :—

STATION.	VARIATION FROM NORMAL OF MEAN			Variation from normal of mean aqueous vapour pressure.	Variation from normal of mean cloud.
	Maximum temperature.	Minimum temperature.	Monthly temperature.		
	o	o	o	"	
Akyab . . . . .	-1.4	-2.1	-1.8	-0.05	-0.5
Dacca . . . . .	-2.3	-2.6	-2.5	-0.61	-0.1
Calcutta . . . . .	-1.8	-3.5	-2.7	-0.82	-1.4
Saugor Island . . . . .	-2.1	-2.8	-2.5	-0.67	-1.0
False Point . . . . .	-0.2	-4.6	-2.4	-0.96	-1.4
Cuttack . . . . .	-1.6	-4.0	-2.8	-0.99	-1.0
Sholapur . . . . .	-1.6	-3.7	-2.7	-0.53	-1.6
Poona . . . . .	-1.2	-4.6	-2.9	-0.47	-0.6
Belgaum . . . . .	-1.6	-3.1	-2.4	-0.58	-1.9
Bellary . . . . .	-2.0	-4.7	-3.4	?	-2.7

The decreased temperature in Bengal and Orissa as also in the Deccan hence accompanied clearer skies and decreased amounts of aqueous vapour present in the air—conditions favourable to increased terrestrial radiation. The pressure conditions of the month gave unusually steady westerly land winds in Bengal during the month. These conditions, it will be seen, explain the abnormal temperature features of the months in Bengal and Orissa.

In the month of December temperature was in slight to moderate excess in Southern India, the Deccan, the Central Provinces and Central India, and below the normal of the period over the remainder of India. The most prominent feature was the unusually low temperature in South Bengal and Burma. The following gives data for eight stations in that area :—

STATION.	VARIATION FROM NORMAL OF MEAN			Variation from normal of mean aqueous vapour pressure.	Variation from normal of mean cloud.
	Maximum temperature.	Minimum temperature.	Monthly temperature.		
	o	o	o	"	
Bassein . . . . .	-0.7(?)	-3.8	-2.3	?	?
Rangoon . . . . .	-2.7	-3.7	-3.2	-1.09	-1.6
Toungoo . . . . .	-2.3	-3.4	-2.9	?	?
Thayetmyo . . . . .	?	-4.8	?	?	?
Akyab . . . . .	-1.9	-4.2	-3.1	-0.38	-2.0
Saugor Island . . . . .	-1.6	-2.3	-2.0	-0.66	-0.8
Calcutta . . . . .	-0.2	-3.8	-2.0	-0.80	-0.9
Chittagong . . . . .	-0.8	-2.7	-1.8	-0.13	+0.7

The mean cloud amount of the month was only 0·4 at Akyab and 0·9 at Calcutta, and skies were practically free from cloud during nearly the whole of the month in the area of decreased temperature. The temperature conditions in Bengal were hence the continuation of the conditions which had prevailed in the month of November, and were due to the same actions and causes in both months.

The abnormally low temperature in Burma was a new feature introduced during the last ten days of November, and which came into special prominence during the latter half of the month of December. The preceding table shows that the deficiency was most pronounced in the night temperature. Lower night temperatures were indeed recorded at several stations than have been observed since

The following table gives the variations of the mean temperature of the whole of India from the normal, during the year 1892, month by month :—

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
Number of stations . . . . .	76	76	76	75	75	74	74	75	72	73	73	69	74
Mean . . . . .	+2·0	+2·0	+1·8	+3·2	+1·8	-0·2	+0·3	-0·6	-0·5	-0·1	-1·1	-0·7	+0·7

and the following table the progressive variations of the mean annual temperature of the past 18 years :—

	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.
Number of stations . . . . .	72	72	74	74	70	106	110	113	122
Mean anomaly . . . . .	0	0	0	0	0	0	0	0	0
Progressive variation . . . . .	-0·29	-0·08	+0·17	+0·62	-0·13	+0·13	-0·01	-0·11	-0·48
	...	+0·21	+0·25	+0·45	-0·75	+0·26	-0·14	-0·10	-0·37
	1884.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.
Number of stations . . . . .	122	118	122	126	127	81	85	72	74
Mean anomaly . . . . .	0	0	0	0	0	0	0	0	0
Progressive variation . . . . .	-0·61	-0·29	+0·08	-0·23	+0·36	+0·86	+0·13	-0·03	+0·66
	-0·13	+0·32	+0·37	-0·31	+0·59	+0·50	-0·73	-0·16	+0·69

### Atmospheric Pressure.

Full information is given in the annual reports hitherto published by the Department of the barometers in use at Indian observatories and of the methods of reducing the observations and obtaining the mean daily pressures (*e.g.*, pages 58 and 59 of the report for 1890).

In Table II given in each monthly review the monthly mean pressure (corrected for temperature) is given in the fourth figure column, and in the fifth figure column the variation from the normal for each station. The variation data are obtained by a comparison of the actual monthly

the commencement of the work of meteorological observation in Burma, as is shown by the following data :—

STATION.	Lowest reading of the minimum thermometer recorded in December 1892.	Lowest reading of the minimum thermometer hitherto recorded since the year 1876 during the month of December.
Diamond Island . . . . .	66·9	66·1 in 1883. 66·7 " 1888.
Bassein . . . . .	55·0	57·2 " 1888.
Rangoon . . . . .	56·7	59·5 " 1876 and 1883.
Moulmein . . . . .	56·4	56·5 " 1876.
Toungoo . . . . .	51·1	52·2 " 1888.
Thayetmyo . . . . .	47·8	48·8 " 1888.
Akyab . . . . .	57·2	56·3 " 1878. 53·3 " 1879. 52·1 " 1880. 57·1 " 1882. 56·1 " 1883 and 1884.

means with normal monthly means published in the last two annual reports (*i.e.*, Table XV in the reports for 1889 and 1890). These normal monthly means will be used for comparison until 1894 probably, when they will be revised up to date.

The figures in these two columns (*vis.*, the fourth and fifth of Table II, pages 552 to 557) are strictly comparable with the corresponding data of previous years published in the annual reports. In the sixth column of Table II in each monthly review the mean pressures reduced to sea-level

and corrected to constant gravity (Lat. 45°) are given. These, it should be noted, are not comparable with the sea-level pressure values of previous years in the annual reports, as previous to 1891 no correction was made to reduce the monthly pressure means to standard gravity.

In Table I of each monthly review the pressure data are given for a fixed hour (*vis.*, 8 A.M.) of the day. The second figure column gives the mean 8 A.M. pressure for the month corrected for temperature. In the third figure column the variations of the mean 8 A.M. pressure from the normal mean 8 A.M. pressure are exhibited.

Normal 8 A.M. mean monthly data for the great majority of stations will be found in Tables VII and IX of the Annual Summary, 1891.

The following tables give geographical summaries of the pressure variation data according to two groups of divisions employed in the corresponding tables of temperature variation data; that is, for the nineteen divisions for which variation data were given in the "Geographical summaries" in the annual reports previous to 1890 and for the eleven meteorological provinces in Table I of each monthly review:—

TABLE IV.—Geographical summary of the pressure variation data of Table II of the monthly reviews of 1892.

METEOROLOGICAL AREA.	Number of Stations.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
		"	"	"	"	"	"	"	"	"	"	"	"	"
North-West Himalaya	7-8	+ '046	- '011	- '030	+ '004	- '014	+ '014	- '016	+ '007	- '008	- '009	- '031	+ '014	- '003
Sikkim Himalaya and Nepal.	2-3	+ '032	- '058	- '078	- '011	- '032	+ '006	- '029	+ '014	- '032	- '010	- '045	+ '010	- '019
Punjab Plains . . .	4	+ '009	- '077	- '106	- '105	- '083	+ '014	- '042	- '001	- '017	- '021	- '042	+ '024	- '037
Gangetic Plain . . .	9	+ '011	- '069	- '100	- '069	- '047	+ '014	- '037	+ '017	- '032	- '014	- '036	+ '019	- '029
Western Rajputana . .	3	- '003	- '070	- '072	- '062	- '015	+ '019	- '044	- '019	- '046	- '024	- '014	+ '027	- '027
Eastern Rajputana and Central India.	4	+ '006	- '072	- '071	- '058	- '021	+ '016	- '045	+ '004	- '046	- '011	- '026	+ '018	- '026
Nerbudda Valley . . .	2-3	+ '006	- '054	- '061	- '050	- '004	+ '011	- '033	+ '003	- '041	- '015	- '008	+ '025	- '018
Chota Nagpur . . .	1	+ '011	- '050	- '081	- '057	- '037	+ '022	- '030	+ '029	- '023	- '004	- '034	+ '054	- '017
Lower Bengal . . .	5	+ '005	- '062	- '093	- '047	- '041	+ '022	- '020	+ '057	- '027	- '006	- '038	+ '029	- '018
Assam and Cachar . .	3	- '021	- '092	- '115	- '047	- '044	- '009	- '046	+ '024	- '045	- '028	- '048	+ '018	- '038
Orissa and Sambalpur	3	+ '004	- '053	- '076	- '053	- '046	+ '015	- '032	+ '035	- '040	- '010	- '024	- '032	- '026
Central Provinces, South and Berar.	5-7	+ '007	- '052	- '062	- '052	- '014	+ '003	- '038	- '006	- '042	- '028	- '004	+ '029	- '022
Konkan . . .	3	- '013	- '052	- '059	- '043	- '004	- '018	- '059	- '023	- '024	- '029	+ '006	+ '034	- '024
Malabar Coast . . .	1	- '004	- '043	- '045	- '027	+ '014	- '052	- '019	- '021	- '003	- '014	- '004	+ '031	- '016
Deccan, Hyderabad, and Mysore.	6	- '005	- '053	- '063	- '042	- '005	- '019	- '044	- '025	- '029	- '031	+ '004	+ '034	- '023
Eastern Coast and Carnatic.	4	+ '015	- '052	- '079	- '043	- '025	- '013	- '032	- '015	- '021	- '020	- '007	+ '035	- '021
Arakan and Pegu . . .	4	+ '004	- '060	- '079	- '027	- '022	+ '011	- '031	+ '029	- '022	- '013	- '039	+ '030	- '018
Tenasserim . . .	1	+ '004	- '063	- '081	- '028	- '015	- '028	- '030	- '017	- '021	- '029	- '038	+ '033	- '026
Bay Islands . . .	1	+ '002	- '052	- '078	- '027	- '009	- '009	- '038	- '012	- '028	- '038	- '043	+ '020	- '026
Extra Tropical India .	45-46	+ '013	- '057	- '078	- '048	- '035	+ '013	- '033	+ '015	- '029	- '014	- '032	+ '017	- '022
Tropical India . . .	25-27	+ '002	- '054	- '068	- '041	- '013	- '009	- '039	- '010	- '028	- '025	- '009	+ '032	- '022
Whole of India . . .	70-73	+ '009	- '056	- '074	- '045	- '027	+ '005	- '035	+ '006	- '029	- '018	- '024	+ '022	- '022

TABLE V.—Variation of the mean pressure of each month of 1892 from the normal in the eleven meteorological provinces of India.

METEOROLOGICAL PROVINCE.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year 1892.
	"	"	"	"	"	"	"	"	"	"	"	"	"
Burma Coast and Bay Islands .	+ '010	- '066	- '083	- '019	- '020	+ '008	- '029	+ '019	- '016	- '013	- '038	+ '044	- '017
Burma Inland . . .	+ '027	- '057	- '075	+ '003?	- '004	+ '015	- '028	+ '034	- '014	+ '001	- '020	+ '056	- '005
Assam . . .	- '009	- '080	- '096	- '035	- '042	- '001	- '033	+ '031	- '029	- '021	- '039	+ '030	- '027
Bengal and Orissa . . .	+ '005	- '065	- '084	- '028	- '037	+ '020	- '022	+ '057	- '021	- '008	- '021	+ '043	- '014
Gangetic Plain and Chota Nagpur.	+ '006	- '065	- '095	- '050	- '048	+ '012	- '038	+ '029	- '030	- '016	- '038	+ '023	- '026
Upper Sub-Himalayas . . .	+ '022	- '062	- '098	- '072	- '054	+ '016	- '046	+ '011	- '018	- '007	- '033	+ '022	- '027
Indus Valley and North-West Rajputana.	+ '008	- '073	- '090	- '082	- '042	+ '021	- '043	+ '002	- '019	- '013	- '026	+ '023	- '028
East Rajputana, Central India and Guzerat.	+ '005	- '058	- '063	- '043	- '002	+ '017	- '045	+ '004	- '044	- '009	- '013	+ '027	- '019
Deccan . . .	+ '011	- '046	- '054	- '039	+ '005	+ '012	- '029	+ '006	- '034	- '019	+ '001	+ '034	- '013
West Coast . . .	- '011	- '054	- '062	- '042	+ '001	- '036	- '041	- '016	- '024	- '027	+ '008	+ '043	- '022
South India . . .	+ '013	- '053	- '071	- '039	- '011	- '013	- '033	- '006	- '019	- '030	+ '009	+ '049	- '017

The more important abnormal features of the pressure distribution of the year 1892 are given in the following paragraphs.

Pressure was throughout the greater part of the year more or less considerably in defect over the whole Indian Monsoon area. The following table gives data:—

MONTH.	Mean variation of 8 A.M. pressure from normal in the Indian land area.
January 1892 . . . . .	+ '007"
February " . . . . .	- '060"
March " . . . . .	- '076"
April " . . . . .	- '044"
May " . . . . .	- '022"
June " . . . . .	+ '007"
July " . . . . .	- '035"
August " . . . . .	+ '014"
September " . . . . .	- '026"
October " . . . . .	- '016"
November " . . . . .	- '015"
December " . . . . .	+ '035"
Year " . . . . .	- '019"

The most remarkable feature in these persistent pressure variations in the Indian Monsoon area is that they extend over the whole area and are not the mere arithmetical resultants of opposite variations in different parts of that area. The variations are occasionally nearly uniform in amount over the whole of that area. The following gives variation data at seven stations for the months of March and December 1892, the former being the month of the greatest negative variation and the latter that of the greatest positive variation during the year:—

STATION.	VARIATION FROM NORMAL OF MEAN PRESSURE IN	
	March 1892.	December 1892.
Mergui . . . . .	- '081"	+ '033"
Port Blair . . . . .	- '078"	+ '020"
Silchar . . . . .	- '100"	+ '020"
Peshawar . . . . .	- '094"	+ '023"
Bushire . . . . .	- '040"	+ '049"
Aden . . . . .	- '036"	+ '039"

I have not as yet been able to obtain data which will show the extension of the area over which the persistent deficiency of pressure during the year 1892 prevailed. The data given above show that it varied in intensity from

month to month in the Indian Monsoon region with the larger meteorological conditions in India. For example, the deficiency was largest in the months of February, March and April when temperature was abnormally high over the interior of India.

The mean pressure of the year was also below the normal at the level of the hill stations but to a smaller amount than at the plain stations. The following gives data for the stations, the barometric data of which are known to be quite trustworthy:—

STATION.	VARIATION OF MEAN PRESSURE OF THE YEAR FROM THE NORMAL.	
	Table II.	Table I.
Quetta . . . . .	+ '006"	+ '023"
Leh . . . . .	+ '026"	?
Kailang . . . . .	+ '011"	?
Murree . . . . .	- '014"	- '011"
Darjeeling . . . . .	- '016"	?
Wellington . . . . .	- '010"	+ '009"

The following data show even more clearly than the previous that the deficiency of pressure during the year was common to the whole monsoon area, and that it was very nearly uniform in amount:—

STATION.	VARIATION OF MEAN PRESSURE OF THE YEAR FROM THE NORMAL.	
	Table II.	Table I.
Mergui . . . . .	- '025	?
Port Blair . . . . .	- '026	?
Silchar . . . . .	- '024	- '016
Peshawar . . . . .	- '032	- '016
Aden . . . . .	- '033	?
Bombay . . . . .	- '022	- '023

**I. The Cold Weather period.**—The mean pressure of the Indian area was practically normal in January, and very considerably in defect in February. These general pressure variations have apparently little to do with the more important abnormal weather features of the period during which they occur. There is a slight tendency to more stormy weather in the cold weather period when pressure is in general excess in the Indian area, and to less disturbed weather when pressure is in general defect. The cold weather of 1890-91 was an example of the former, and that of 1891-92 of the latter.

The most important feature of the pressure conditions of this period was the excess of pressure at the hill stations relatively to the plains. This feature was the continuation of conditions established at the end of the year 1891. The following table gives data of seven pairs

of stations for the months of January and February 1892, and also for the preceding four months :—

MONTH.	VERTICAL PRESSURE ANOMALY.						
	Quetta and Jaccobabad.	Leh and Lahore.	Kailang and Lahore.	Mirre and Peshawar.	Simla and Ludhiana.	Ranikhet and Lucknow.	Wellington and Cochin.
September 1891	+ '042	+ '023	+ '023	+ '016	+ '010	+ '033	+ '023
October "	+ '029	- '009	- '010	+ '006	?	- '008	+ '051
November "	+ '054	+ '113	+ '056	+ '054	+ '037	+ '016	+ '018
December "	+ '029	+ '060	- '005	+ '019	+ '015	+ '010	+ '044
January 1892	+ '046	+ '076	+ '057	+ '027	+ '017	+ '042	+ '032
February "	+ '093	+ '100	+ '078	+ '049	+ '042	+ '054	+ '041
Mean of period	+ '049	+ '060	+ '033	+ '028	+ '024	+ '024	+ '035

The data establish that throughout the whole of this period from September 1891 to February 1892—

1st—There was a remarkable persistent excess of pressure at the higher level stations.

2nd—This excess was very marked in the months of November and December and hence antecedent to the cold weather of 1891-92.

3rd—The excess was greatest at Leh and Quetta, that is, at the most elevated station and at the station in the Indian area most representative of the conditions of the Central Asian plateau.

4th—The excess was as strongly exhibited at the hill stations of Mount Abu, Pachmarhi and Wellington in Central and Southern India as at the Himalayan stations, and hence undoubtedly represented a persistent abnormal condition in the middle and possibly the higher atmospheric strata over the whole Indian Monsoon area.

Persistent excess of pressure at the hill stations as compared with the neighbouring plain stations in Northern India in the cold weather months is (almost) invariably associated with deficient rainfall and absence of cyclonic storms in Northern India. The cold weather of 1891-92 is a strong confirmation of the validity of this relation.

There were no important local variations of pressure at the level of the plains in the cold weather period. Pressure was locally in moderate defect (—'029") throughout the period in Assam, and there was a tendency towards excess pressure in the West Deccan. It was very slightly marked in January. The following gives data showing

the position of the area of greatest excess of pressure in February :—

STATION.	Pressure anomaly.
Malegaon	+ '029
Poona	+ '028
Sholapur	+ '023
Bellary	+ '026

II. The Hot Weather period.—The following were the chief features of the pressure conditions of this period :—

1st—Pressure was in large and general defect over the whole Indian area. The following gives data in illustration :—

MONTH.	MEAN VARIATION OF PRESSURE FROM THE NORMAL OF		
	Whole of India.	Extra Tropical India.	Tropical India.
March 1892	- '076	- '078	- '068
April "	- '044	- '048	- '041
May "	- '022	- '035	- '013
Mean of period	- '047	- '054	- '041

2nd—This feature was as strongly marked at Aden, Bushire and other Extra-Indian stations as in India or Burma, and it was hence almost certainly a general condition of the whole monsoon area and perhaps of Southern and Central Asia :—

STATION.	MEAN VARIATION OF PRESSURE FROM THE NORMAL IN			Mean of period.
	March 1892.	April 1892.	May 1892.	
Bushire	- '037	- '006	- '002	- '015
Aden	- '036	- '053	- '026	- '038
Mergui	- '081	- '028	- '015	- '041
Port Blair	- '078	- '027	- '009	- '038

The deficiency of pressure was in part due to general conditions obtaining during the year and in part to the excessive temperature prevailing during this period in the Indian Monsoon region and perhaps also in the Central Asian plateau, as the preceding winter appears to have been unusually mild over the whole of that area.

3rd.—Pressure was locally in excess in the Peninsula (more especially in the Deccan) and was in defect over the whole of Northern India and Burma. The deficiency was throughout most marked in Upper India. The following two tables give data for representative stations in the areas of greatest local excess and of greatest deficiency of pressure:—

	STATION.	PRESSURE ANOMALY IN			MEAN OF PERIOD.
		March 1892.	April 1892.	May 1892.	
AREA OF LOCAL EXCESS OF PRESSURE.	Malegaon . . .	+·027	+·016	+·045	+·030
	Poona . . .	+·030	+·022	+·035	+·029
	Sholapur . . .	+·034	+·032	+·037	+·034
	Bellary . . .	+·035	+·031	+·046	+·037
	Bangalore . . .	+·021	+·021	+·027	+·023

The excess was hence greatest in amount in May, in which month the area of greatest local excess of pressure covered Mysore, the West Deccan, Khandeish, Guzerat and Berar.

	STATION.	PRESSURE ANOMALY IN			MEAN OF PERIOD.
		March 1892.	April 1892.	May 1892.	
AREA OF GREATEST LOCAL DEFICIENCY OF PRESSURE.	Mooltan . . .	-·027	-·056	-·045	-·043
	D. I. Khan . . .	-·041	-·078	-·055	-·058
	Peshawar . . .	-·009	-·042	-·029	-·027
	Lahore . . .	-·025	-·043	-·036	-·035
	Ludhiana . . .	-·030	-·043	-·048	-·040
	Roorkee . . .	-·036	-·022	-·041	-·033
	Bareilly . . .	-·039	-·016	-·041	-·032
	Lucknow . . .	-·035	-·024	-·046	-·035

The deficiency was hence large in amount over the whole of the Punjab and in the sub-montane districts of the North-Western Provinces. It was absolutely greatest in the Indus Valley between Dera Ismail Khan and Mooltan or a little to the north of the south-west monsoon low pressure sink in Upper India.

4th.—Pressure was throughout this period, as in the preceding cold-weather period, very considerably in excess at the hill stations as compared with the neighbouring plain stations. This is shown by the following data:—

PAIR OF STATIONS.	VERTICAL PRESSURE ANOMALY IN			MEAN OF PERIOD.
	March 1892.	April, 1892.	May 1892.	
Quetta and Jacobabad . . .	+·115	+·095	+·050	+·087
Murree and Rawalpindi . . .	+·055	+·081	+·035	+·057
Simla and Ludhiana . . .	+·074	+·098	+·049	+·074
Ranikhet and Bareilly . . .	+·061	+·054	+·038	+·051
Darjeeling and Dhubri . . .	+·009	-·002	?	+·004
Mount Abu and Deesa . . .	+·034	+·061	?	+·048
Pachmarhi and Hoshangabad . . .	+·031	+·040	+·017	+·029
Wellington and Coimbatore . . .	+·057	+·056	+·040	+·051

The excess was very large in March, but decreased steadily in April and May, and was generally moderate in the latter month. The pressure conditions at Darjeeling and perhaps in the Eastern Himalayas were very different from those obtaining in the South-Western Himalayas.

III. *The south-west monsoon period.*—The pressure conditions of the south-west monsoon varied considerably from month to month, and there was no marked persistent feature, except that of moderate general defect of pressure.

The mean pressure of the whole Indian area was normal in June, '035" in defect in July, '014" in excess in August, and '026" in defect in September. Pressure hence oscillated in approximately two monthly periods about a condition of general deficiency of pressure averaging '015" during this period.

In the month of June pressure was locally in excess in Northern India, and in defect in the Peninsula. The local deficiency exceeded '04" in Malabar, where it was greatest, and the excess averaged '02" in the Indus Valley.

The pressure anomalies of June were hence of opposite character to those of the preceding May.

The pressure anomalies were everywhere small in amount in July. There was a slight local excess in North-Eastern India, and a slight deficiency in North-Western India, greatest in Lower Sind.

The conditions in August were similar to those of July but were more strongly marked. The local excess of pressure in North-Eastern India was greatest in South Bengal, or in the area represented by the following stations: Burdwan (+·050"), Calcutta (+·048"), Saugor Island (+·043"), and Chittagong ('042"). Pressure was locally in defect over the whole of North-Western and Western India. The deficiency was greatest in the west coast districts, where it averaged '03."

The local pressure anomalies in September were generally small in amount over the whole of India. The high pressure in Bengal had nearly disappeared. On the other hand, a more rapid increase of pressure than usual at the termination of the heavy rains in Upper India, gave a local excess of pressure in the West Punjab (greatest at Peshawar, where it averaged +·03" for the month). The deficiency of pressure in Western India was also less marked than hitherto and of little importance, except in Guzerat, Rajputana and Central India, where it slightly exceeded '025". The probable relation between these modifications of the pressure relations and the rainfall of the period is discussed in the last section of the summary.

The hot weather of 1892 hence increased and exaggerated both the general and the local pressure anomalies, whilst, on the other hand, the rains produced the opposite effect. The general deficiency of pressure was reduced to a small amount, and the local variations were (with the one exception of South Bengal in August) small and apparently of

little importance, as they were results rather than causes of the varying distribution of the rainfall throughout the season.

The most important change in the pressure conditions due to the rainfall was the disappearance of the excessive pressure at the hill stations relative to the plains. The following gives data for eight pairs of stations, and establishes that the vertical pressure anomalies were small in amount and somewhat irregular in character:—

PAIR OF STATIONS.	VERTICAL PRESSURE ANOMALY IN				MEAN OF PERIOD.
	June 1892.	July 1892.	August 1892.	September 1892.	
Leh and Lahore . . . . .	+ '022	+ '052	+ '034	+ '013	+ '030
Quetta and Jacobabad . . . . .	— '015	+ '016 <sup>p</sup>	+ '007	+ '036	+ '011
Murree and Rawalpindi . . . . .	— '013	+ '003	— '023	— '009	— '010
Simla and Ludhiana . . . . .	+ '008	+ '037	— '001	+ '008	+ '013
Ranikhet and Bareilly . . . . .	+ '004	+ '027	+ '012	+ '027	+ '017
Darjeeling and Dhubri . . . . .	— '019	— '018	— '042 <sup>p</sup>	— '009 <sup>p</sup>	— '022
Pachmarhi and Hoshangabad . . . . .	+ '003	+ '005	+ '001	+ '004	+ '003
Wellington and Coimbatore . . . . .	+ '032	+ '013	+ '019	+ '025	+ '022

**IV. The retreating south-west monsoon period.**—The chief abnormal features of the pressure distribution are given in the following statement.

The mean pressure of the Indian land area was '016" below the normal in October. The local anomalies in that month were nowhere large in amount.

The following gives the more important:—

- (1) Pressure was in slight excess over nearly the whole of Northern India. The excess was greatest in East Rajputana and the adjacent districts of the North-Western Provinces.
- (2) It was in defect at the foot of the Assam and Sikkim Himalayas.
- (3) It was in defect in the Peninsula, the deficiency being greatest in the Central Deccan, but nowhere exceeded '02" in amount. The excess in North-Western India was apparently an after-effect of the heavy rains in that area in July, August and September.

The mean pressure of November of the Indian land area was '015" below the normal. The anomalies were more marked than in the preceding month. The chief were:—

- (1) Locally deficient pressure in Northern India and Burma, greatest at the foot of the hills between Roorkee and Sibsagar. The deficiency exceeded '03" at Sibsagar (—'036"), Gorakhpore (—'032"), and Roorkee (—'031"). This feature was the extension of the slight deficiency at the foot of the Assam and Sikkim Hills in October.
- (2) Local excess of pressure in the Peninsula, greatest in the Deccan which had received unusually

heavy rain in the preceding month. The excess was greatest at Sholapur (+ '039"), Bellary (+ '044), and Madras (+ '030").

The pressure distribution in November was very abnormal, pressure being lowest in Tenasserim, the Andaman Sea and south-east of the Bay of Bengal. Such a distribution of pressure in the month of November is always associated with a more or less complete failure of the rains of the month in the Coromandel Coast districts and Southern India.

The mean pressure of the whole Indian area was '035" above the normal in December. The barometric anomalies or local features of the pressure distribution in December were similar in character but smaller in amount to those in the preceding month.

The chief were:—

(1) Slight deficiency of pressure in North-Western and Northern India, greatest in amount at the foot of the Central Himalayas in the North-Western Provinces, where it was '02".

(2) Slight general excess in the Peninsula, greatest in Southern India at Madura (+ '024") and Negapatam (+ '023").

Pressure was lowest during the month at the entrance to the Bay, and the only important feature was the excessive pressure in the Deccan and Southern India, which was associated with an almost complete failure of the rains of the month in Madras and Southern India generally.

During the whole of this period pressure was slightly in defect at the hill stations in Upper India as compared with the plains.

The following gives the vertical pressure anomalies as deduced from the variations of eight pairs of stations:—

PAIR OF STATIONS.	VERTICAL PRESSURE ANOMALY IN			MEAN OF PERIOD.
	October 1892.	November 1892.	December 1892.	
	"	"	"	"
Leh and Lahore . . . . .	+ '024	— '001	— '006	+ '006
Murree and Rawalpindi . . . . .	— '007	— '001	— '004	— '004
Quetta and Jacobabad . . . . .	+ '017	+ '018	+ '001	+ '012
Simla and Ludhiana . . . . .	— '023 <sup>p</sup>	— '024	— '034	— '027
Darjeeling and Dhubri . . . . .	— '004	+ '005	— '003	— '001
Pachmarhi and Hoshangabad . . . . .	— '001	+ '005	+ '013	+ '006
Wellington and Coimbatore . . . . .	+ '034	+ '026	+ '019	+ '026

The following gives a statement of the cyclones and more important cyclonic storms which affected the Indian area during the south-west moosoon period,—May to October 1892,—drawn up in the form adopted in the annual reports of the Meteorology of India for the years 1886—90. The tracks of these storms are laid down in Plate VI:—



No.	Year.	Month.	Date.	Greatest observed barometric depression.	Character of storm.	Details of storm.	No.	Year.	Month.	Date.	Greatest observed barometric depression.	Character of storm.	Details of storm.	
						passed into the eastern districts of the Central Provinces on the 31st. It thence moved very slowly during the next three days through the central districts of the Central Provinces where it absorbed a feeble depression which formed at the head of the Bay on the 1st and followed rapidly the same westerly track as the preceding depression. The combined depression intensified on the 3rd and passed during the next 24 hours into the western states of Central India. It thence advanced into South-West Rajputana on the 5th. The storm then recurved to the north and was absorbed into the low pressure area in Upper India on the 7th and 8th.							it passed and very heavy rain on the 14th and 15th to the South-East Punjab and adjacent districts of the North-Western Provinces. The S. S. "Persia" and "Bancura" experienced winds of force 8 and 9 in the Bay during the storm.	
						The storm gave a heavy burst of rain to the districts through which it passed, more especially to South-West Rajputana and the western states of Central India. The strongest winds experienced by ships in the Bay during the storm were of force 6 and 7.							This was a diffused and feeble disturbance which formed in the centre of the Bay on the 17th and 18th. It intensified slightly during the next four days and marched west-north-westwards towards the Circars coast which it crossed on the afternoon of the 21st. It thence advanced rapidly across the Peninsula and filled up in the West Deccan on the 23rd. The storm gave moderate general rain to the Peninsula. Winds of force 6 were experienced in the storm area in the Bay.	
6	1892	September.	7th to the 12th	'30"	Cyclonic storm of moderate intensity.	This storm formed on the 6th and 7th in the north of the Bay off the Arakan coast. The centre on the morning of the 7th was probably in Lat. 18° N. and Long. 91° E. It marched westwards during the next two days, and on the morning of the 9th was approaching the Orissa coast which it crossed near Puri during the afternoon. The centre on the morning of the 10th was about 30 or 40 miles west of Cuttack and at 4 P.M. near Sambalpur. It advanced north-westwards through the central districts of the Central Provinces on the 11th into South-East Rajputana on the 12th. It was absorbed into the Upper India permanent low pressure area during the next 48 hours. It gave moderate rain to the districts through which							This storm originated in the south-east of the Bay on the 13th and 14th. The centre commenced to move westwards on the 14th and was in about Lat. 11° N. and Long. 90° E. at 8 A.M. of the 15th. The storm crossed the coast near Nellore on the morning of the 17th. The storm filled up rapidly during the day. A small residual depression was however transmitted westwards across the Deccan into the Arabian Sea. The conditions in that sea area being unfavourable, it failed to redevelop. Winds force 8 and 9 were experienced by vessels in the storm area.	
							7	1892	September.	19th to 23rd.	'25"	Extensive but feeble depression.		
							8	Ditto	October	13th to 17th.	'25"	Cyclonic storm of considerable intensity.		
							9	Ditto	Ditto	18th to 21st.	'50"	Cyclonic storm of small extent, but of considerable intensity.		This storm formed in the Andaman Sea or the Gulf of Siam whilst the previous storm was breaking up. It concentrated rapidly in the Andaman Sea into a small storm of considerable intensity on the 17th and passed between the Andamans and Diamond Island on the morning of the 18th. The centre

No.	Year.	Month.	Date.	Greatest observed barometric depression.	Character of storm.	Details of storm.
						marched across the Bay with an average velocity of 18 miles per hour during the next 48 hours and passed inland between Coconada and Masulipatam on the morning of the 20th. It continued to advance west-north-westward and was to the south-west of Secunderabad at 8 A.M. of the 21st. It was now filling up and was of but little importance. The residual depression was however propagated westwards to the Konkan and the adjacent portion of the Arabian Sea during the next two days. The storm gave a heavy burst of rain to the Circars and Deccan on the 20th and 21st. The strongest winds experienced by vessels in the Bay during this storm were of force 9 and 10.
10	1892	October	25th to 31st.	'19"	Feeble depression.	This was a feeble but extensive depression which formed on the 25th and 26th in the centre of the Bay. It advanced slowly in a west-by-north direction during the next three days and crossed the Coromandel coast near Nellore on the afternoon of the 29th. It filled up rapidly in the Central Deccan during the next 36 hours. The storm gave unusually heavy and general rain to the Central and North Madras coast districts. The strongest winds experienced in the storm area in the Bay were of force 7.

the two most important land-formed storms during the monsoon period of 1892.—

No.	YEAR.	MONTH.	DATE.	Greatest observed barometric depression.	Character of storm.	Details of storm.
1	1892	July	18th to 20th.	'14"	Feeble depression	This was generated during a heavy burst of rainfall in Chota Nagpur and the adjacent districts of West Bengal on the 16th and 17th. It marched west-north-westwards and the centre was between Patna and Gaya on the morning of the 19th. The depression continued to drift in the same direction, and on the morning of the 20th covered the North-Western Provinces with its centre between Gorakhpur and Benares. It filled up during the next 24 hours. The storm determined heavy rain to Bundelkhand, Baghelkhand and the North-Western Provinces.
2	Ditto	Ditto	22nd to 29th	'24"	Feeble cyclonic storm.	This storm was formed immediately after the previous depression had filled up. Like the previous storm it originated in West Bengal on the 21st and 22nd. It marched slowly west-north-westwards through Chota Nagpur on the 23rd and Baghelkhand on the 24th, into Rajputana and Upper Sind on the 25th and 26th, and was absorbed into the permanent low pressure area of the rains in Upper India. This low pressure area developed to some extent on the 26th and following days and determined a strong burst of monsoon winds from the Arabian Sea, which gave exceptionally heavy rain to West Rajputana, Sind and the West and Central Punjab from the 26th to the 30th.

The following gives a brief statement of the tracks of

### Winds

The mean direction of the wind and the mean diurnal movement of the air as measured by an anemometer are given for every station in Table II in each monthly review. The normal values are also given for the sake of ready comparison. The normal data of these elements will be found in a collected form in Tables XX and XXI in the annual report for 1890. The mean 8 A.M. wind directions for each month are laid down in the first chart in each

monthly review. They are calculated in the usual manner from the 8 A.M. wind data given in Table I in each monthly review. As a general rule the mean 8 A.M. wind directions differ little from the mean wind directions (calculated from the 10 and 16 hours wind data) given in Table II of each monthly review, but in some cases and at certain seasons of the year they differ very considerably.

The chief features of the air movement over India have been described in the monthly reviews of the year. The following gives a summary of the most important features :—

**I.—Cold weather period.**—Winds were much steadier and slightly stronger than usual over the whole of Northern India in January, and were normal in direction except in Bengal, where the westerly component was much stronger than usual. They were also slightly stonger and steadier in the Gangetic plain in February. Southerly winds set in early in February in South Bengal and blew with abnormal strength and steadiness during the month. Winds were light throughout the period at the hill stations in the Western Himalayas.

The mean movement of the period was practically normal in strength and direction. The chief features of the winds in January and February were hence directly related to the absence of cold weather storms and the greater prevalence of what may be termed the normal conditions of the period. The only important variation was the strong westing of the winds in Bengal during the month of January. The following gives data for stations illustrating that feature :—

STATION.	JANUARY.		FEBRUARY.	
	Mean wind direction.	Normal wind direction.	Mean wind direction.	Normal wind direction.
False Point . . . . .	N 68° E	N 51° E	S 3° E	S 12° W
Saugor Island . . . . .	N 38° W	N 1° E	S 83° W	S 58° W
Calcutta . . . . .	N 53° W	N 38° W	N 78° W	S 81° W
Dacca . . . . .	N 81° W	N 53° W	S 60° W	S 76° W

**II.—Hot weather period.**—The chief features of the air circulation of this period were due to the intensified hot weather conditions which prevailed throughout the whole period, but which were most strongly exhibited in the month of March. The following gives the chief features :—

**1st.**—Unusual strength and steadiness of the winds over the whole of Northern and Central India.

PROVINCE.	AIR MOVEMENT.					
	MARCH.		APRIL.		MAY.	
	Mean daily air movement in miles per diem.	Variation from normal in miles per diem.	Mean daily air movement in miles per diem.	Variation from normal in miles per diem.	Mean daily air movement in miles per diem.	Variation from normal in miles per diem.
Punjab . . . . .	69	+5	72	—1	85	+6
North-Western Provinces . . . . .	100	+23	87	+2	112	+27
Bihar and Chota Nagpur . . . . .	166	+43	188	+39	208	+52
Bengal and Orissa . . . . .	185	+37	253	+53	234	+40
Rajputana . . . . .	145	0	204	+41	278	+59
Central India . . . . .	68	+14	86	+18	72	—9

PROVINCE.	STEADINESS.					
	MARCH.		APRIL.		MAY.	
	Actual percentage.	Variation from normal.	Actual percentage.	Variation from normal.	Actual percentage.	Variation from normal.
Punjab . . . . .	47	+22	30	+9	25	+2
North-Western Provinces . . . . .	69	+31	37	+4	44	+27
Bihar and Chota Nagpur . . . . .	61	+16	45	+17	54	+17
Bengal and Orissa . . . . .	62	+16	75	+18	76	+19
Assam . . . . .	36	+4	30	+5	34	+11
Rajputana . . . . .	54	+22	76	+22	86	+29
Central India . . . . .	72	+38	80	+26	82	+38

**2nd.**—Winds were approximately normal in direction in the Gangetic plain. They were more directly from the south at the coast stations in Bengal and Orissa, but contained an abnormally strong westerly component in the interior of Bengal. It may be noted that decreased westing in the southerly winds at the coast stations and increased westing at the Central Bengal stations is the usual rule when the hot weather conditions are more strongly pronounced than usual in March, April, and May.

The following gives data for five stations, two in the coast districts and three in the interior :—

STATION.	WESTERLY DEFLECTION.		
	March.	April.	May.
{ False Point . . . . .	—27	—20	—27
{ Saugor Island . . . . .	—26	—13	—14
{ Calcutta . . . . .	+34	+14	+29
{ Dacca . . . . .	+5	—2	+6
{ Burdwan . . . . .	—17	—25	+17

**3rd.**—Easterly winds were unusually strong and steady in Assam and easterly winds advanced earlier up the Gangetic plain along the foot of the Himalayas than usual in the months of March and April. In March these easterly winds were confined to North Bengal. In April they had extended to North Bihar, and the eastern districts of the North-Western Provinces. On the other hand in May unusually strong and steady westerly winds prevailed in the Gangetic plain and no further general advance of easterly winds was shown until the month of June. The extension of these winds is indicated

most clearly by the small steadiness percentage of the following stations :—

MONTH.	STATION.	STEADINESS.		DIRECTION.	
		Actual, percentage.	Normal percentage.	Mean wind direction.	Normal wind direction.
MARCH	Dhubri .	16	14	S 27° E	S 81° E
	Durbhanga .	46	27	N 88° W	S 70° W
APRIL	Ghazipur .	5	43	S 22° E	N 82° W
	Lucknow .	10	44	S 35° W	N 53° W
MAY	Roorkee .	10	6	S 61° W	S 68° W
	Lahore .	12	21	N 64° W	N 7° E

4th.—Unusually strong winds prevailed in the Peninsula and more especially in the Deccan, where abnormally steady westerly winds obtained during the greater part of the period. The following gives data for representative stations illustrating the increased strength of the winds over the greater part of the Peninsula :—

PROVINCE.	STATION.	MARCH.		APRIL.		MAY.	
		Mean daily air movement, miles per diem.	Variation from normal, miles per diem.	Mean daily air movement, miles per diem.	Variation from normal, miles per diem.	Mean daily air movement, miles per diem.	Variation from normal, miles per diem.
BERAR	Akola .	118	+14	164	+34	272	+69
CENTRAL PROVINCES.	Nagpur .	127	+19	192	+65	264	+96
BOMBAY, DECCAN.	Sholapur .	181	0	201	-2	262	+21
MADRAS DECCAN	Bellary .	130	+20	141	+14	242	+42
BOMBAY COAST	Secundrabad .	155	+33	182	+59	250	+68
	Bombay .	236	-36	248	-23	275	+27
MADRAS COAST	Ratnagiri .	172	-59	189	-74	233	-32
	Madras .	162	+11	188	0	226	+6

The preceding data show that over the interior of the Deccan winds were considerably above their normal strength, and that the increase was on the whole more marked at the eastern than the western stations of the Deccan. It is noteworthy that during the greater part of this period of abnormally strong westerly winds in the Deccan, winds were considerably below their normal strength in the Bombay coast districts and were practically normal in the Coromandel Coast districts.

The chief features of the air motion of the period were hence clearly due to the strongly marked hot weather conditions of the period. The local indraught from the adjacent seas was greater than usual, the increase being greatest across the Cutch and Kattiawar coasts in the case of the Arabian Sea and across the Bengal and Orissa coasts in that of the Bay of Bengal. Also each of the three currents which converge towards the hot weather low pressure area in Chota Nagpur was much stronger than usual. The increase was least marked in the feeblest and least

important of the three currents, *vis.*, that down the Assam Valley.

The following data show the increased strength of the air currents across the coast districts named above :—

PROVINCE.	STATION.	MARCH.		APRIL.		MAY.	
		Mean daily air movement, miles per diem.	Variation from normal, miles per diem.	Mean daily air movement, miles per diem.	Variation from normal, miles per diem.	Mean daily air movement, miles per diem.	Variation from normal, miles per diem.
ORISSA AND BENGAL.	Saugor Island	406	+111	503	+102	485	+118
	False Point .	307	+40	436	+104	421	+99
	Dacca .	185	+73	217	+54	206	+56
RAJPUTANA	Deesa .	206	-7	264	+39	357	+36
CUTCH	Bhuj .	168	-24	168	-24	432	+72
KATTIAWAR	Rajkot .	165	-26	264	+24	336	+24

III.—*The South-West monsoon period.* A strong advance of monsoon winds occurred in the beginning of the month of June across both the Bengal and Bombay coasts, and was in each case accompanied by the formation and advance of a cyclonic storm. The storm in the Arabian Sea was feeble, and the rebound of pressure after its disintegration was apparently less than usual, as a shallow residual depression began to affect the winds on the Bombay coast in the middle of the second week of the month. It formed the chief feature of the next ten or twelve days. Both branches of the monsoon current retreated from the Gangetic plain, Central India and the Deccan and dry land winds and hot weather conditions were re-established for a brief period. Winds fell off very considerably in strength on the Bombay coast and shifted from west round to south or south-east. This continued until the 26th or 27th, when they began to shift back to their normal monsoon directions. They were, however, feeble for some days, and it was not until the 4th or 5th of July that strong monsoon winds set in again on the West coast. These initiated the permanent advance of the Bombay monsoon current. The chief features of the air movement over India in June were hence very abnormal and were largely determined by the prolonged break in the third and fourth weeks of the month. The more noteworthy features were :—

1st.—The mean air movement across the Bombay or West coast was 35 per cent. below its normal amount.

2nd.—The mean movement across the Bengal coast was upwards of 32 per cent. above its normal amount in June.

3rd.—Winds were very unsteady and irregular in North-Western India.

4th.—Winds were on the average of the month much more southerly and less westerly than usual on the West coast.

5th.—Winds were very unsteady and feeble in Southern India and the Deccan.

6th.—The deflections of the mean winds of the month in Bengal were such as usually occur when hot weather conditions obtain to a greater extent than usual in the Gangetic plain.

The monsoon currents were established with unusual rapidity over the whole of India in the first week of July and had their greatest extension in the latter half of July and the month of August, when the western districts of the Punjab and the interior hill districts of the Western Himalayas received abnormally heavy rain. They decreased in strength in Northern India in September and withdrew from the Punjab, Rajputana and Western Himalayas on the 25th and 26th of September.

The following gives the more important features of the air movement over India during the months of July, August, and September:

1st.—Both currents were stronger and steadier than usual. The increased strength was more marked in the Bengal than in the Bombay current. The following gives approximate data based on the returns of selected stations, where the exposure of the anemometers is most satisfactory:—

MONSOON CURRENT.	VARIATION OF DAILY AIR MOVEMENT FROM NORMAL EXPRESSED AS PERCENTAGE.			
	July.	August.	September.	Mean of period.
Bay of Bengal . . . . .	+27	+17	+32	+25
Bombay . . . . .	+6	-12	+22	+6

2nd.—The Bay current was slightly less strongly directed to Burma than usual in July and August, more especially in August. This was shown by the diminished westing of the winds and is confirmed by the smaller rainfall than usual in that area during this period. The following gives data for three stations in illustration:—

STATION.	INCREASED SOUTHING OR DECREASED WESTING OF WINDS IN		
	July.	August.	September.
Port Blair . . . . .	-2°	+7°	-13°
Diamond Island . . . . .	+12°	+29°	+14°
Rangoon . . . . .	-10°	+6°	-16°
Akyab . . . . .	-5°	+5°	+1°

An important feature in connection with the air motion of the south-west monsoon months in India is the position of the trough of low pressure. It was slightly further south than usual in July, but the displacement was small and of little importance.

In August it occupied a very abnormal position and was very considerably further south than usual, more especially in the eastern half. It covered the south-eastern districts of the Central Provinces instead of North Orissa and Chota Nagpur as in normal years. In September it was also displaced further south, but to a much smaller distance than in August.

The southerly displacement of the eastern half of the trough of low pressure in August was directly related to the unusual easting of the winds in Bengal which formed an important feature of the air motion in August and the increased southing of the winds.

The following wind data for several stations illustrate these features:—

	STATION.	WIND DIRECTION.		STEADINESS.	
		Mean wind direction, September 1892.	Normal mean wind direction of September.	Average percentage.	Normal percentage.
South of Trough .	Sambalpur . . . . .	S 19° W	S 54° W	68	42
	Secunderabad . . . . .	N 75° W	S 87° W	81	83
	Sironcha . . . . .	S 66° W	S 84° W	23	63
	Vizagapatam . . . . .	S 42° W	S 74° W	55	64
North of Trough .	Hazaribagh . . . . .	S 10° E	S 50° W	52	7
	Patna . . . . .	S 74° E	S 19° E	66	34
	False Point . . . . .	S 3° E	S 57° W	77	53

**IV.—The retreating south-west monsoon period.**—The south-west monsoon current in the south of the Bay was remarkably feeble in November. The greater part of the Andaman Sea formed an area of shallow depression and winds were irregular and unsteady in Lower Burma, Tenasserim, and at Port Blair. Strong north-east winds set in over that area in the last week of November. A feeble disturbance originated in the Bay at the end of that month and gave showery weather to the Coromandel coast districts on the 1st, 2nd, and 3rd December. North-easterly winds then extended rapidly over the south of the Bay, and the ordinary north-east monsoon circulation was established over the whole area and held steadily during the remainder of the month.

The abnormal features of the air motion in November were hence due to the persistent deficient pressure in the Andaman sea during that month and in December to the premature and early withdrawal of the south-west humid winds in the first week of December, nearly three weeks earlier than usual.

Winds were much stronger and steadier than usual in the Gangetic plain and Chota Nagpur in these two months. The following gives data for three stations:—

STATION.	PERCENTAGE INCREASE IN STRENGTH.		PERCENTAGE INCREASE OF STEADINESS.	
	November.	December.	November.	December.
Hazaribagh . . . . .	+ 63	+ 19	+ 40	+ 6
Patna . . . . .	+ 98	+ 66	+ 152	+ 63
Allahabad . . . . .	+ 127	+ 62	+ 248	+ 150

Winds contained as might be expected from the conditions a stronger westerly element than usual in Bengal. The following gives data for four stations:—

STATION.	DECEMBER.			NOVEMBER.		
	Mean wind direction.	Normal wind direction.	Increased westing.	Mean wind direction.	Normal wind direction.	Increased westing.
Dacca . . . . .	N 49° W	N 36° W	+ 13°	N 26° W	N 17° W	+ 9°
Saugor Island . . . . .	N 10° W	N 7° E	+ 17°	N 13° W	N 5° E	+ 18°
Berhampore . . . . .	N 47° W	N 26° W	+ 21°	N 32° W	N 25° W	+ 7°
Burdwan . . . . .	N 31° W	N 23° W	+ 8°	N 13° W	N 7° W	+ 6°

Winds were lighter and more unsteady in the Deccan and Konkan. This feature was associated with and probably due to the weakness of the winds on the Madras coast and to their very slight easting. The following gives data showing the deflection of the winds at the

Madras stations caused by the peculiar conditions in the Bay:—

STATION.	NOVEMBER.		DECEMBER.		Mean monthly deflection.
	Mean wind direction.	Normal wind direction.	Mean wind direction.	Normal wind direction.	
Madras . . . . .	N 2° E	N 24° E	N 17° E	N 24° E	- 15°
Vizagapatam . . . . .	N 16° E	N 75° E	N 37° E	N 83° E	- 53°
Salem . . . . .	N 10° E	S 65° E	N 29° E	N 89° E	?

The following data illustrate the weakness of the winds during this period in the Bombay coast districts and the West Deccan:—

STATION.	NOVEMBER.			DECEMBER.		
	Mean daily air movement, miles per diem.	Normal daily air movement, miles per diem.	Percentage variation.	Mean daily air movement, miles per diem.	Normal daily air movement, miles per diem.	Percentage variation.
Bombay . . . . .	225	236	- 4	198	238	- 17
Ratnagiri . . . . .	182	199	- 9	177	213	- 17
Poona . . . . .	124	138	- 10	109	136	- 20
Belgaum . . . . .	233	280	- 17	301	296	+ 2

Winds were very unsteady during the month of November in the Andaman sea area, but were stronger and steadier in December. The following gives data:—

STATION.	NOVEMBER.				DECEMBER.			
	Steadiness.		Daily air movement in miles.		Steadiness.		Daily air movement in miles.	
	Actual percentage.	Normal percentage.	Actual.	Normal.	Actual percentage.	Normal percentage.	Actual.	Normal.
Port Blair . . . . .	28	53	133	165	66	72	199	171
Diamond Island . . . . .	45	64	233	195	64	74	233	166
Rangoon . . . . .	32	57	92	102	78	60	109	114

**Humidity.**

The following tables give variation data of aqueous vapour pressure and humidity:—

1st.—For the nineteen meteorological areas adopted in the geographical summaries of meteorological

logical data in the annual reports previous to 1892.

2nd.—For the eleven meteorological provinces of the Empire.

TABLE VI.—Geographical summary of the aqueous vapour pressure data of Table II in the Monthly Weather Reviews for the year 1892.

METEOROLOGICAL DISTRICT.	Number of stations.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
		"	"	"	"	"	"	"	"	"	"	"	"	"
North-west Himalaya	7-8	+ '001	+ '008	- '035	- '021	- '011	- '028	0	+ '002	+ '030	0	- '017	- '006	- '006
Sikkim Himalaya and Nepal.	2-3	+ '011	- '001	- '005	+ '087	+ '047	+ '003	+ '003	- '009	+ '029	- '023	- '016	- '002	+ '010
Punjab Plains . . .	3-4	+ '007	+ '017	- '075	- '004	+ '004	- '034	- '018	+ '062	+ '025	- '015	- '017	- '028	- '006
Gangetic Plain . . .	7-8	+ '003	+ '040	- '054	+ '071	- '001	- '015	- '002	+ '017	+ '047	- '021	- '035	- '024	+ '002
Western Rajputana . .	3	+ '010	+ '033	- '082	- '013	- '041	- '066	+ '013	+ '070	+ '008	+ '003	- '035	- '035	- '011
Eastern Rajputana and Central India.	3-4	+ '048	+ '069	- '039	+ '075	+ '034	+ '006	+ '008	+ '053	+ '104	+ '013	- '002	- '003	+ '031
Nerbudda Valley . . .	3	+ '027	+ '034	- '044	+ '043	+ '024	+ '028	+ '012	+ '045	+ '039	+ '033	- '011	+ '011	+ '020
Chota Nagpur . . .	1	+ '005	+ '040	- '107	+ '068	- '089	+ '016	- '020	- '013	0	+ '001	- '052	- '016	- '014
Lower Bengal . . .	4-5	- '025	- '014	- '098	+ '040	+ '014	- '025	- '025	- '040	- '024	- '035	- '066	- '063	- '030
Assam and Cachar . .	3	+ '015	+ '044	- '041	+ '069	+ '030	+ '004	+ '001	- '017	+ '036	- '017	- '020	- '005	+ '009
Orissa and Sambalpur.	3	- '006	- '011	- '082	+ '046	+ '018	+ '002	0	- '014	- '018	+ '006	- '084	- '054	- '016
Central Provinces South, and Berar.	5-7	- '009	- '018	- '074	- '012	- '041	+ '025	+ '012	+ '034	+ '007	+ '058	+ '046	- '004	+ '002
Konkan . . .	3	- '008	+ '012	+ '011	+ '048	- '007	+ '019	+ '013	- '008	- '014	+ '010	- '080	- '019	- '002
Malabar Coast . . .	1	- '031	+ '005	+ '013	+ '011	- '024	+ '018	- '011	- '023	- '010	- '013	+ '002	- '052	- '010
Deccan, Hyderabad and Mysore.	5-6	- '011	+ '009	- '015	+ '064	+ '022	+ '036	+ '021	+ '020	+ '006	+ '046	- '055	0	+ '010
East Coast and Carnatic.	3-4	- '001	+ '034	- '013	+ '026	- '014	+ '018	+ '006	+ '021	- '028	- '005	- '059	- '045	- '005
Arakan and Pegu . . .	3-4	- '025	- '010	- '055	+ '013	+ '030	+ '008	- '001	- '017	- '015	- '017	- '016	- '063	- '014
Bay Islands . . .	1	- '040	+ '007	- '073	- '009	- '029	+ '009	- '001	- '007	- '012	+ '003	- '065	- '098	- '026
Extra Tropical India .	42-45	+ '007	+ '023	- '057	+ '037	+ '006	- '014	- '002	+ '015	+ '027	- '008	- '031	- '021	- '002
Tropical India . . .	23-27	- '016	+ '001	- '037	+ '020	- '014	+ '020	+ '010	+ '009	- '006	+ '024	- '022	- '026	- '003
Whole of India . . .	65-72	- '002	+ '015	- '049	+ '030	- '002	- '001	+ '002	+ '013	+ '015	+ '004	- '028	- '023	- '002

TABLE VII.—Geographical Summary of the humidity data of Table II in the Monthly Weather Reviews for the year 1892.

METEOROLOGICAL DISTRICT.	Number of Stations.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
North-West Himalaya	7-8	-9	-2	-15	-13	-9	-1	-1	+3	+6	+2	-1	+1	-3
Sikkim Himalaya and Nepal.	2-3	-1	-2	-5	+10	+4	0	0	+1	+1	+1	-1	+5	+1
Punjab Plains . . .	3-4	-4	-3	-15	-12	-5	-3	0	+12	+6	0	-1	-2	-2
Gangetic Plain . . .	7-8	-4	+1	-8	+2	-2	-1	0	+6	+3	-3	-3	-2	-1
Western Rajputana and Sind.	3	0	+1	-11	-5	-2	-4	+1	+4	0	0	-5	-7	-2
Eastern Rajputana and Central India.	3-4	+5	+6	-8	0	0	+1	-1	+6	+11	+3	0	+1	+2
Nerbudda Valley . . .	3	0	0	-5	-2	+1	+1	0	+5	+6	+4	+2	+1	+1
Chota Nagpur . . .	1	-4	+4	-14	+1	-11	+3	-1	-3	0	-1	-8	-6	-3
Lower Bengal . . .	4-5	-7	-7	-13	-1	-4	-2	-2	-3	-3	-4	-5	-7	-5
Assam and Cachar . .	3	-2	0	-7	+5	+5	0	+1	+2	-2	0	-1	0	0
Orissa and Sambalpur	3	-5	-5	-8	-3	-6	0	0	-3	-2	-1	-4	-5	-4
Central Provinces South and Berar.	5-7	-2	-4	-8	-5	-5	+1	-2	+2	+4	+6	-3	0	-1
Konkan . . .	3	-3	-2	0	-2	-3	+3	+1	+2	+1	+2	-5	-1	-1
Malabar Coast . . .	1	-7	-3	-2	+1	-1	-4	0	-1	-2	0	-3	-7	-2
Deccan, Hyderabad and Mysore.	5-6	-3	+2	-3	+6	+2	+4	+1	-4	+5	+7	-1	+3	+2
East Coast and Carnatic.	3-4	-1	+2	-3	0	-5	+1	-1	+5	-1	-1	-7	-6	-1
Arakan and Pegu . . .	3-4	-3	-1	-4	0	+3	-1	0	-2	-2	0	+1	-3	-1
Tenasserim . . .	1	-5	0	-2	+2	+5	-4	?	-4	?	?	?	?	?
Bay Islands . . .	1	-6	-2	-5	-2	0	-1	+1	-1	-3	+1	0	-9	-2
Extra Tropical India .	42-45	-4	-1	-10	-3	-3	-1	0	+3	+3	0	-2	-2	-2
Tropical India . . .	23-27	-3	-1	-4	0	-1	+1	0	+2	+2	+3	-3	-1	-1
Whole of India . . .	65-72	-3	-1	-8	-2	-2	0	0	+3	+2	+1	-2	-2	-1

TABLE VIII.—Variations of the mean aqueous vapour pressure in 10 meteorological provinces of India in 1892.

METEOROLOGICAL PROVINCE.	MEAN VARIATION OF AQUEOUS VAPOUR PRESSURE FROM NORMAL IN												Year 1892.
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
	"	"	"	"	"	"	"	"	"	"	"	"	"
Burma Coast and Bay Islands	-.050	-.006	-.067	-.016	-.009	-.011	-.002	-.023	-.018	-.016	-.023	-.084	-.027
Assam	+.015	+.044	-.041	+.069	+.030	-.004	+.001	-.007	+.036	-.017	-.020	-.005	+.009
Bengal and Orissa	-.015	+.001	-.074	+.048	+.031	-.011	-.015	-.031	-.020	-.021	-.071	-.054	-.019
Gangetic Plain and Chota-Nagpur.	-.003	+.029	-.088	+.080	-.007	-.008	-.009	+.004	+.021	-.026	-.040	-.028	-.006
Upper Sub-Himalayas	-.003	+.009	-.090	-.033	-.027	-.036	+.001	+.051	+.065	-.012	-.026	-.021	-.010
Indus Valley and North-West Rajputana	-.001	+.015	-.089	-.003	-.004	-.030	+.005	+.057	-.017	-.017	-.049	-.039	-.014
East Rajputana, Central India and Guzerat.	+.043	+.057	-.027	+.093	+.022	-.024	0	+.051	+.101	+.017	-.016	-.016	+.025
Deccan	0	+.007	-.062	+.018	-.022	+.028	+.016	+.035	+.022	+.047	-.035	+.002	+.005
West Coast	-.014	+.011	+.012	+.039	-.011	+.019	+.007	-.012	-.013	+.004	-.060	-.027	-.004
South India	+.001	+.034	-.014	+.032	-.012	+.019	+.012	+.014	-.017	+.003	-.058	-.002	+.001

TABLE IX.—Variations of the mean humidity from the normal in 10 meteorological provinces of India in 1892.

METEOROLOGICAL PROVINCE.	MEAN VARIATION OF HUMIDITY FROM NORMAL IN												Year 1892.
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
Burma Coast and Bay Islands	- 4	- 1	- 3	- 1	+ 3	- 1	0	- 2	- 1	- 1	0	- 6	- 1
Assam	- 2	0	- 7	- 5	+ 5	0	+ 1	+ 2	- 2	0	- 1	0	- 1
Bengal and Orissa	- 6	- 7	- 10	0	- 3	- 2	- 1	- 3	- 3	- 3	- 4	- 5	- 4
Gangetic Plain and Chota-Nagpur.	- 5	- 1	- 8	+ 4	- 3	+ 1	- 1	+ 3	0	- 5	- 5	- 4	- 2
Upper Sub-Himalayas	- 3	- 2	- 14	- 10	- 6	- 2	+ 1	+ 12	+ 10	+ 2	0	+ 1	- 1
Indus Valley and North-West Rajputana.	- 4	- 3	- 15	- 9	- 4	- 2	+ 1	+ 6	- 2	- 2	- 6	- 6	- 4
East Rajputana, Central India and Guzerat	+ 4	+ 4	- 6	+ 1	+ 1	- 2	- 1	+ 6	+ 12	+ 4	- 2	- 2	+ 2
Deccan	- 1	0	- 6	- 2	- 3	+ 2	0	+ 4	+ 5	+ 5	0	+ 2	+ 1
West Coast	- 4	- 2	- 1	- 2	- 2	+ 1	+ 1	+ 2	+ 1	+ 1	- 5	- 3	- 1
South India	- 3	+ 2	- 3	+ 2	- 3	+ 1	+ 1	+ 4	+ 1	+ 1	- 8	- 3	- 1

The following gives a summary of the more important features of this element of meteorological observation :—

**I.—Cold weather period.**—The amount of aqueous vapour present in the air in January was normal or in slight excess in North-Western India and normal or in slight defect in the Peninsula. The variations were in almost all cases small and of little importance. The absolute humidity was in slight to moderate excess over nearly the whole of India in February. In consequence of the increased temperature of the period, humidity was generally below the average. The deficiency was large, exceeding 5 during January in the North-West Himalayas (—9), Lower Bengal and Malabar (—7) and the Bay Islands (—6). It was large during February in Lower Bengal (—7).

Hence during this period the air was unusually dry in Lower Bengal.

**II.—Hot weather period.**—The hygrometrical conditions of March were very abnormal. The amount of aqueous vapour was more or less largely in defect in almost all parts of India, and humidity in consequence of the excessive temperature was very largely in defect. The aqueous vapour pressure in Extra Tropical India averaged '057" in defect and in Tropical India '037" in defect. Humidity in the former area was 10 below the normal and in the latter 4.

The deficiency in the humidity in March was largest in the Western Himalayas, the Punjab, West Rajputana, Sind, the North-Western Provinces, Chota Nagpur and Bengal.

The following gives data for these provinces in March :—

PROVINCE.	AQUEOUS VAPOUR PRESSURE.			HUMIDITY.		
	Actual.	Normal.	Variation from normal.	Actual.	Normal.	Variation from normal.
	"	"	"	%	%	
North-West Himalayas	.172	.207	-.035	38	53	-15
Punjab	.286	.361	-.075	38	53	-15
North-West Provinces and Bihar	.315	.369	-.054	36	44	-8
Chota Nagpur	.182	.289	-.107	20	34	-14
Lower Bengal	.538	.636	-.098	52	65	-13
Orissa and Sambalpur.	.575	.657	-.082	57	65	-8

This excessively dry period culminated in a period of abnormal dryness on the 28th and 29th of the month.

The following gives 8 A.M. and 4 P.M. data of the 29th for several stations where the air was most abnormally dry :—

STATION.	8 A. M. OF 29TH.		4 P. M. OF 29TH.	
	Aqueous Vapour pressure.	Humidity.	Aqueous Vapour pressure.	Humidity.
	"	%	"	%
Peshawar	.033	4	.100	8
Khushab	.032	3	?	?
Rawal Pindi	.064	9	?	?
Lahore	.187	24	.079	4
Roorkee	.213	30	.056	4
Allahabad	.195	18	.069	3
Akola	.482	39	.091	4
Buldana *	.138	7	.043	2

\* At 10 A.M.

The preceding data are interesting as they illustrate the very large and rapid changes of the absolute humidity of the air which accompany the large convective movements of the atmosphere in the interior of India in the hot weather.

The abnormal conditions of the month of March gave rise to and were followed in April by much larger local indraught from the sea areas across the coast districts than usual, and hence the amount of aqueous vapour was more or less above the average in April except in the Punjab and North-Western Provinces. As the temperature was generally above the average, the variations of the humidity conditions were small except in Upper India. The deficiency averaged 12 in the Punjab plains and 13 at the Western Himalayas Hill stations. The conditions in May were similar to those of April. Humidity was 3 below the normal in Extra-Tropical India in that month and 1 below the normal in Tropical India.

The chief features during this period were (1st) excessive dryness over the whole of India in March and (2nd) excessive dryness in the Punjab, Sind and Western Himalayas

during the whole period. The following table gives data for five representative stations in the latter areas :—

PROVINCE.	STATION.	VARIATION FROM NORMAL OF MEAN HUMIDITY IN			VARIATION FROM NORMAL OF MEAN AQUEOUS VAPOUR PRESSURE IN		
		March.	April.	May.	March.	April.	May.
					"	"	"
PUNJAB	{ Peshawar	-15	-17	-6	-.046	-.020	+.011
	{ Lahore	-16	-14	-2	-.122	-.119	-.026
SIND	{ Jacobabad	-17	-17	-11	-.106	-.134	-.136
HILL STATIONS.	{ Murree	-16	-25	-12	-.036	-.068	-.026
	{ Simla	-25	-23	-13	-.087	-.088	-.057

**III.—The south-west monsoon period.**—The hygrometrical conditions differed from the normal to a slight extent in June and July. There was slightly more aqueous vapour present in the air in Tropical India and slightly less in Northern India. The deficiency was largest in amount in North-Western India where humidity averaged 3 below the normal in June. The conditions were reversed in August and September, the amount of aqueous vapour being greater than usual in Extra-Tropical India and normal or in slight defect in Tropical India. The chief feature in these two months was the excessive humidity in the Punjab in August and in Rajputana in September.

The following gives data for representative stations in these two areas of excessive humidity :—

STATION.	AUGUST.		SEPTEMBER.	
	Variation from normal of		Variation from normal of	
	Aqueous vapour pressure.	Humidity.	Aqueous vapour pressure.	Humidity.
	"	"	"	"
Ludhiana	+.056	+12	+.064	+14
Lahore	+.082	+17	+.048	+11
Peshawar	+.089	+15	-.050	-1
Jeypore	+.049	+5	+.119	+12
Ajmere	+.080	+7	+.133	+16
Deesa	+.048	+3	+.052	+8

The same feature of increased humidity was also strongly exhibited at the hill stations in the Western Himalayas :—

STATION.	VARIATION FROM NORMAL OF MEAN HUMIDITY IN		VARIATION FROM NORMAL OF MEAN AQUEOUS VAPOUR PRESSURE IN	
	August.	September.	August.	September.
			"	"
Leh	+5	+7	+.018	+.035
Kailang	+2	+16	-.004	+.056
Murree	?	-1	?	-.026
Simla	+3	+4	-.012	-.007

The increased humidity at the hill stations was due almost solely to decreased temperature and not to an excess of vapour in the atmosphere immediately above these stations.

**IV.—The retreating south-west monsoon period.**—The amount of vapour present in the air in October was slightly less than usual over the whole of Northern and Central India and was normal or in excess in the Deccan and Southern India. During the remainder of the year it was more or less considerably in defect over the whole Indian area and the air was much drier than usual. This deficiency in the amount of vapour present in the air in November and December was on the whole greatest in Burma and Bengal. The absolute humidity was also largely in defect in Southern India in November. The following gives data for the four areas in which these conditions were most strongly exhibited:—

DISTRICT.	VARIATION FROM NORMAL OF AQUEOUS VAPOUR PRESSURE IN			VARIATION FROM NORMAL OF HUMIDITY IN		
	November.	December.	Mean.	November.	December.	Mean.
Lower Burma and Bay Islands	—'023	—'084	—'054	0	—6	—3
Bengal and Orissa	—'071	—'054	—'063	—4	—5	—5
West Coast	—'060	—'027	—'044	—5	—3	—4
Southern India	—'058	—'002	—'030	—8	—3	—6
Indus Valley and North-West Rajputana	—'049	—'039	—'044	—6	—6	—6

As already pointed out this change from increased to decreased humidity began to be exhibited in September and October, but was not strongly shown until November. It was almost as marked in the area of abnormally excessive rain in the Indus Valley and in the west coast districts of India, as it was in the area of deficient rainfall in North-Eastern India. It was also almost as strongly shown at the insular stations and the stations on the borders of the Indian monsoon area as in India itself, as is shown by the following:—

STATION.	VARIATION FROM NORMAL OF HUMIDITY IN		VARIATION FROM NORMAL OF AQUEOUS VAPOUR PRESSURE IN	
	November.	December.	November.	December.
Port Blair	0	—9	—'065	—'098
Amini Devi	—2	—2	—'009	—'033
Aden	—1	—4	+ '011	—'026

On the other hand the hygrometric data of the hill stations show that the mean aqueous vapour and humidity were slightly in excess in December and practically normal in November. It is hence apparent that the deficiency was restricted to the lowest atmospheric strata near the earth's surface, and was hence probably due to a larger and stronger drift than usual of the shallow land winds of the north-east monsoon.

**Cloud.**

The following tables give variation data of the cloud amount:—

1st.—For the nineteen meteorological areas adopted

in the geographical summaries of meteorological data in the annual reports previous to 1891.  
2nd.—For ten meteorological provinces of the Empire.

TABLE X.—Geographical Summary of the cloud data of Table II in the 1892 Monthly Weather Reviews.

DISTRICT.	Number of Stations	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
North-West Himalaya	7-8	—0'9	+0'7	—1'8	—1'6	—0'4	—0'1	—0'5	+0'1	+0'9	—1'1	+0'3	+0'4	—0'3
Sikkim Himalaya and Nepal	2-3	+0'3	—0'1	—1'5	+0'8	+0'9	+1'0	+0'7	+0'9	+0'9	—0'3	+0'6	+1'7	+0'5
Punjab Plains	4	0	+0'4	—1'3	—1'2	—0'8	+0'1	+0'4	+1'9	+1'3	—0'6	+0'8	+0'7	+0'1
Gangetic Plain	9	—0'6	—0'3	—1'8	—1'4	—0'8	—0'2	+0'4	+1'3	+0'8	—0'3	—0'4	+0'6	—0'2
Western Rajputana	3	+0'6	—0'9	—1'7	—0'9	0	+0'4	+0'4	+0'8	+0'7	+0'3	—0'5	+1'3	0
Eastern Rajputana and Central India	4	—0'1	—0'5	—1'9	—1'4	—0'5	—0'6	+0'1	+0'7	+1'5	+0'2	—0'2	+1'1	—0'1
Nerbudda Valley	3	—0'2	—0'3	—1'9	—0'7	—0'9	—0'6	0	+0'6	+1'1	+0'8	—1'0	+0'3	—0'2
Chota Nagpur	1	+0'2	+0'8	—2'4	—0'5	—0'8	+0'9	+0'7	+1'0	+0'5	+2'0	—2'0	—0'1	+0'3
Lower Bengal	5	—0'4	+0'6	—1'6	+0'9	+0'5	+0'5	+0'4	0	+0'2	+0'5	—1'1	—0'6	0
Assam and Cachar	4	0	+0'9	—1'1	+0'6	+1'2	0	0	+0'4	—0'7	—0'9	—1'0	—0'4	—0'1
Orissa and Sambalpur	3	—0'1	—0'3	—1'4	—0'3	—0'2	+0'4	+0'5	+0'3	+1'0	+1'3	—1'3	—0'6	—0'1
Central Provinces South, and Berar	5-8	0	—0'3	—1'9	—0'3	—0'3	+0'5	+0'3	+0'8	+1'3	+1'9	—1'1	—0'6	0

TABLE X.—Geographical Summary of the cloud data of Table II in the 1892 Monthly Weather Reviews—continued

DISTRICT.	Number of Station.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
Konkan . . . . .	3	-0.2	-0.5	-0.6	+0.8	+0.1	-0.3	+0.9	+1.4	+1.3	+0.3	-0.9	-0.3	+0.2
Malabar Coast . . . . .	1	+2.0	-1.4	-1.1	+1.5	+0.8	-0.7	+2.1	+1.2	+0.8	-0.2	-1.1	-2.2	+0.1
Deccan, Hyderabad and Mysore . . . . .	6	+0.2	+0.1	-0.9	+1.4	+0.4	+0.5	+0.4	+0.9	+0.7	+1.1	-1.5	-0.3	+0.3
East Coast and Carnatic . . . . .	4	+0.9	+1.3	-0.4	+1.6	-0.2	+0.3	+0.9	+0.9	+1.0	+0.2	-1.3	-0.1	+0.4
Arakan and Pegu . . . . .	4-5	-0.8	+0.2	-0.2	+1.6	+2.0	+1.0	+1.2	+0.8	+1.4	+0.6	+1.1	-0.7	+0.7
Tenasserim . . . . .	1	-0.4	-0.1	+1.3	+1.8	+1.1	-0.9	+0.2	-0.1	+0.3	-0.5	-0.6	+0.5	+0.2
Bay Islands . . . . .	1	+0.5	-0.8	+1.0	-0.1	+2.4	+1.1	+2.2	+1.2	+2.1	+2.4	+2.1	+0.9	+1.3
Extra Tropical . . . . .	46-47	-0.3	+0.1	-1.7	-0.7	-0.2	+0.1	+0.2	+0.7	+0.8	-0.1	-0.4	+0.4	-0.1
Tropical . . . . .	25-29	+0.1	0	-0.8	+0.9	+0.4	+0.4	+0.7	+0.9	+1.1	+1.0	-0.7	-0.4	+0.3
Whole of India . . . . .	71-76	-0.1	+0.1	-1.3	-0.1	0	+0.2	+0.4	+0.8	+0.9	+0.3	-0.5	+0.1	+0.1

TABLE XI.—Variation of the mean cloud amount in 10 meteorological provinces of India in 1892.

METEOROLOGICAL PROVINCE.	VARIATION OF THE MEAN CLOUD AMOUNT IN												Year 1892.
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
Burma Coast and Bay Islands . . . . .	-0.6	-0.3	+0.7	+1.2	+1.9	+0.5	+1.0	+0.4	+1.1	+0.3	+0.7	-0.4	+0.5
Assam . . . . .	+0.3	+1.0	-1.3	+0.9	+1.5	+0.5	+0.2	+0.5	+0.2	-0.5	-0.8	-0.2	+0.2
Bengal and Orissa . . . . .	-0.4	+0.4	-1.6	+0.7	+0.4	+0.5	+0.6	+0.4	+0.6	+1.0	-0.7	-0.4	+0.1
Gangetic Plain and Chota Nagpur . . . . .	-0.5	-0.4	-1.9	-1.0	-0.8	-0.1	+0.5	+1.0	+0.4	+0.1	-1.0	+0.3	-0.3
Upper Sub-Himalayas . . . . .	-0.4	+0.3	-1.5	-1.6	-0.9	-0.1	+0.1	+2.0	+1.8	-0.6	+0.3	+0.9	0
Indus Valley and North-West Rajputana . . . . .	+0.9	0	-1.2	-0.3	-0.3	+1.1	+1.6	+2.2	+0.6	-0.2	+0.4	+1.4	+0.5
East Rajputana, Central India and Guzerat . . . . .	+0.3	-0.3	-1.9	-1.2	-0.1	-0.3	+0.3	+1.0	+2.1	+0.2	-0.1	+1.5	+0.1
Deccan . . . . .	-0.2	-0.5	-1.8	-0.2	-0.2	+0.4	+0.6	+1.0	+1.4	+1.5	-1.2	-0.3	0
West Coast . . . . .	-0.4	-0.7	-0.8	+1.0	+0.3	-0.4	+1.2	+1.4	+1.2	+0.2	-0.9	-0.8	+0.1
South India . . . . .	+0.8	+1.3	-0.1	+1.7	-0.1	+0.1	+0.8	+1.0	+0.8	+0.2	-1.7	-0.5	+0.4

The chief features of the distribution of cloud during the year were as follows:—

**I.—Cold weather period.**—The cloud amount was in slight defect in Burma and Northern and Central India, and in slight excess in Southern India, but the variations were in no case large or important.

**II.—Hot weather period.**—As already pointed out the hot weather commenced much earlier than usual, and the whole of the period was characterized by strongly-pronounced hot weather conditions in Northern and Central India. The unusually strong sea-winds gave larger amounts of cloud in the coast districts and the more frequent and earlier advances than usual of southerly humid winds in Southern India, Tenasserim, and Lower Burma gave increased cloud in these districts. In consequence of this combination of conditions, the area over which

increased cloud prevailed extended further into the interior with the advance of the season.

Table X shows that the only divisions which had a larger amount of cloud than usual in March were Tenasserim and the Bay Islands. In April and May the cloud amount was above the average over the whole of Southern India, Burma, and Bengal.

March 1892 was remarkable for the absence of cloud over the greater part of the interior. The mean cloud over the whole of the Bombay Deccan, Berar, the Central Provinces, Central India and Chota Nagpur was less than 0.5, and at several stations (*vide* Table, page 88 of the March 1892 monthly review), it was less than 0.2. The deficiency in the amount of cloud in March averaged 1.7 in Extra-Tropical or Continental India (the normal average amount being 2.5) and 0.8 in Tropical India. The defi-

ciency in Extra-Tropical India in April averaged 0·7. In Tropical or Peninsular India the cloud amount in that month averaged 0·9 in excess the increase being greatest in the coast districts of Burma and the Peninsula. The area of least cloud amount was transferred in April northwards to the North-Western Provinces and Central Bihar, over nearly the whole of which the mean cloud amount was less than 0·5.

The deficiency in Extra-Tropical India decreased to an average of 0·2 in May.

The following gives comparative cloud data of the whole period for the larger provinces:—

PROVINCES.	MEAN DAILY CLOUD IN			VARIATION FROM NORMAL OF MEAN DAILY CLOUD IN		
	March 1892.	April 1892.	May 1892.	March 1892.	April 1892.	May 1892.
Burma . . . . .	2·4	4·6	7·8	+0·3	+1·4	+2·0
Assam . . . . .	2·9	5·9	7·7	-1·3	+0·9	+1·5
Bengal and Orissa . . . . .	1·3	4·0	5	-1·6	+0·7	+0·4
Bihar and Chota Nagpur.	0·3	1·1	1·7	-1·9	-0·8	-1·1
North-Western Provinces.	0·6	0·3	1·2	-1·8	-1·5	-0·7
Punjab . . . . .	2·3	1·8	1·4	-1·3	-1·2	-0·8
Sind . . . . .	1·4	2·3	2·3	-1·2	+0·3	+1·0
Rajputana . . . . .	0·8	0·9	1·5	-1·7	-1·1	-0·2
Berar and Central Provinces.	0·2	1·8	2·4	-1·8	-0·7	-0·6
Bombay . . . . .	0·7	3·5	4·0	-1·2	+1·1	+0·3
Madras . . . . .	2·5	5·1	4·9	-0·1	+1·7	-0·1

The chief feature during this period was hence the very great deficiency of cloud in the interior of Northern and Central India, greatest in amount in the districts farthest from the coast.

The deficiency was as marked in the hill districts of Upper India as over the adjacent plains. It also extended over the countries to the west and north-west of Upper India and was as large in amount at Aden in Arabia as in the Punjab.

**III.—The south-west monsoon period.**—The amount of cloud was in general excess throughout the whole of this period. The average excess for the whole of India increased from the beginning to the end of the

period. The excess averaged 0·2 in June, 0·4 in July, 0·8 in August and 0·9 in September. The excess throughout was slightly greater in Tropical than in Extra-Tropical India. The areas of greatest excess varied considerably from month to month. In June the excess was greatest in the Bay Islands (+1·8) and Arakan (+1·2). In July it was greatest in the Bay Islands (+2·2) and the Malabar Coast (+2·1). In August it was greatest in the Punjab (+1·9), Konkan (+1·4), and the North-Western Provinces (+1·3), and in September it was greatest in the Bay Islands (+2·1), East Rajputana (+1·5), Arakan and Pegu (+1·4), the Punjab, Central Provinces and Konkan (+1·3).

One of the chief features of the period was hence the excessive cloud in the Bay Islands during the whole period, and in North-Western India during the months of August and September.

**IV.—The retreating south-west monsoon period.**—The cloud amount was in slight to moderate excess in October over the whole of India, with the exception of Assam, the Punjab and North-Western Provinces, where it was slightly less than usual owing to the earlier retreat of the monsoon currents from North-Western India than usual. The excess over the remainder of India in October was greatest in Chota Nagpur (+2·0), the Central Provinces (+1·9), Orissa (+1·3) and the Deccan (+1·1). Skies were practically free from cloud in Upper India. For example, the mean cloud amount of the month at Mooltan was *nil* and at Simla 0·3.

During the remaining two months the amount of cloud was more or less considerably in defect except in Upper India, where increased cloud indicated the probability of more stormy weather than usual during the succeeding cold weather, and in the Bay Islands and Tenasserim. The deficiency was large in Southern India, averaging -1·1 for the two months, and in the Deccan and West coast districts, where it averaged -0·8.

The variations in the amount of cloud during the year hence corresponded closely with the general character of the weather and with the rainfall distribution of the cold weather and the south-west monsoon. On the average for the whole year the cloud amount was normal in Extra-Tropical India and in slight excess in Tropical India (+0·3).

**Rainfall.**

The rainfall data of India are now issued in a separate volume. The second volume, that of 1892, contains the rainfall data of 1,977 stations which are classified under their respective administrative divisions according to the following scheme:—

PROVINCE,	Number of Stations.
Burma . . . . .	98
Assam . . . . .	90
Bengal, Bihar, Chota Nagpur and Orissa . . . . .	267
North-Western Provinces and Oudh . . . . .	267
Punjab . . . . .	190
Bombay . . . . .	279
Madras . . . . .	316
Coorg . . . . .	9
Central Provinces . . . . .	66
Berar . . . . .	26
Mysore . . . . .	76
Baluchistan . . . . .	46
Kashmir . . . . .	9
Rajputana . . . . .	113
Central India . . . . .	35
Hyderabad (Deccan) . . . . .	27
Travancore . . . . .	39
Cochin . . . . .	3
Coorg . . . . .	9
Pudukota . . . . .	12

The information includes monthly statements of—

- (a) the actual rainfall day by day;
- (b) the total of the month;
- (c) the number of rainy days during the month; and for all stations for which rainfall data for at least five years are available;
- (d) the average or normal rainfall of the month;
- (e) the average or normal number of rainy days of the month;

(f) the accumulated rainfall (up to the date of each statement) throughout each of the seasons into which the year is divided.

This volume hence contains the whole of the available information for the year 1892 of this important element of meteorological observation.

Symon's rain-gauges are now used at all rain-gauge stations, with the exception of those in Mysore. The hour of measuring rainfall is 8 A.M. throughout India, and the amounts registered give the rainfall of the previous 24 hours, and hence generally of the rainfall of the previous civil day.

The following tables give summaries of the rainfall data of the years. In the first two tables the summaries are drawn up in the form that have been used for the past 11 years in the annual reports issued by the Department. In the two following tables XIV and XV the actual average rainfall data are given for the 52 meteorological districts into which the empire is divided for the comparison of crops and rainfall for the four periods into which the year may be divided. The four periods are as follows:—

- 1st.—From January 1st to February 28th, which forms the period of the cold weather rains of Upper India.
- 2nd.—From March 1st to May 31st, which includes the hot season when rain occurs mainly in the coast districts and in Assam during thunder showers.
- 3rd.—From June 1st to October 31st, which forms the period of the south-west monsoon rains proper.
- 4th.—From November 1st to December 31st, which includes the period of the so-called north-east monsoon rains of Southern India,—more especially of the Coromandel Coast districts.

TABLE XII.—Geographical Summary of Rainfall Anomalies in 1892.

METEOROLOGICAL DIVISION.	Area, square miles.	Number of stations.	Normal rainfall.	Actual rainfall, 1892.	Mean excess or defect.	Total excess, square miles, x 1 inch.	Total defect, square miles, x 1 inch.
			Inches.	Inches.	Inches.		
I. Punjab Plains . . . . .	120,000	29	21.52	25.02	+ 3.50	420,000	...
II. North-Western Provinces and Oudh . . . . .	83,500	45	37.49	37.69	+ 0.20	16,700	...
III. Rajputana . . . . .	67,000	19	28.42	41.03	+ 12.61	844,870	...
IV. Central India States . . . . .	91,000	20	42.01	45.86	+ 3.85	350,350	...
V. Bihar . . . . .	30,000	15	45.01	42.74	- 2.27	...	68,100
VI. Western Bengal . . . . .	38,000	10	49.39	44.24	- 5.15	...	195,700
VII. Lower Bengal . . . . .	54,000	28	66.64	55.97	- 10.67	...	576,180
VIII. Assam and Cachar . . . . .	61,000	16	96.39	105.04	+ 8.65	527,650	...
IX. Orissa and Northern Circars . . . . .	27,000	16	48.00	50.86	+ 2.86	77,220	...
X. Central Provinces, South . . . . .	61,000	18	51.38	54.09	+ 2.71	165,310	...
XI. Berar and Khandesh . . . . .	43,000	13	35.96	47.60	+ 11.64	500,520	...
XII. Guzerat . . . . .	54,500	12	33.03	44.09	+ 11.06	602,770	...
XIII. Sind and Cutch . . . . .	68,000	10	8.49	11.88	+ 3.39	230,520	...
XIV. North Deccan . . . . .	48,000	13	30.54	41.76	+ 11.22	538,560	...

TABLE XII.—Geographical Summary of Rainfall Anomalies in 1892—concluded.

METEOROLOGICAL DIVISION.	Area, square miles.	Number of stations.	Normal rainfall.	Actual rainfall, 1892.	Mean excess or defect.	Total excess, square miles, x 1 inch.	Total defect, square miles, x 1 inch.
			Inches.	Inches.	Inches.		
XV. Konkan and Ghats . . . . .	16,000	11	138.92	168.96	+30.04	480,640	...
XVI. Malabar and Ghats . . . . .	18,000	8	113.89	139.97	+26.08	469,440	...
XVII. Hyderabad . . . . .	74,000	15	32.54	50.26	+17.72	1,311,280	...
XVIII. Mysore and Bellary . . . . .	58,000	18	29.52	32.92	+3.40	197,200	...
XIX. Carnatic . . . . .	72,000	38	36.06	30.91	-5.15	...	370,800
XX. Arakan . . . . .	11,000	7	148.04	137.17	-10.87	...	119,570
XXI. Pegu . . . . .	32,500	7	71.95	70.60	-1.35	...	43,875
XXII. Tenasserim . . . . .	10,500	4	172.38	155.38	-16.80	...	176,400
XXIII. Upper Burma . . . . .	?	13	38.73	38.63	-0.10	...	...

On the mean of the whole area represented in the above table there was an excess of 4.55 inches or, excluding the Burmese Peninsula, 5.09 inches.

TABLE XIII.—Geographical Summary of the distribution of rainfall in 1892, according to seasons.

METEOROLOGICAL DISTRICT.	JANUARY AND FEBRUARY.			MARCH TO MAY.			JUNE TO OCTOBER.			NOVEMBER AND DECEMBER.		
	Normal average.	Actual average, 1892.	Difference.	Normal average.	Actual average, 1892.	Difference.	Normal average.	Actual average, 1892.	Difference.	Normal average.	Actual average, 1892.	Difference.
	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
North-West Himalayas . . . . .	6.17	2.78	-3.39	7.61	2.24	-5.37	40.53	45.17	+4.64	1.75	0.82	-0.93
Punjab Plains . . . . .	2.08	0.83	-1.25	2.54	0.84	-1.70	16.13	22.48	+6.35	0.77	0.86	+0.09
North-Western Provinces and Oudh . . . . .	1.41	1.25	-0.16	1.42	0.31	-1.11	35.25	36.76	+1.51	0.38	0.29	-0.09
Rajputana . . . . .	0.46	0.73	+0.27	0.74	0.53	-0.21	21.51	30.57	+9.06	0.22	0.39	+0.17
Central India States . . . . .	0.91	1.55	+0.64	0.78	0.22	-0.56	41.88	44.22	+2.34	0.67	0.39	-0.28
Bihar . . . . .	1.17	0.79	-0.38	2.54	0.99	-1.55	40.47	40.60	+0.13	0.31	0.05	-0.26
Western Bengal and Chota Nagpur . . . . .	1.28	1.23	-0.05	3.48	1.32	-2.16	46.49	48.44	+1.95	0.72	0.38	-0.34
Lower Bengal . . . . .	1.41	0.39	-1.02	10.40	10.39	-0.01	53.63	42.87	-10.76	0.71	2.09	+1.38
Eastern Himalayas . . . . .	1.56	2.32	+0.76	18.12	30.82	+12.70	111.11	116.74	+5.63	0.46	1.06	+0.60
Assam and Eastern Bengal . . . . .	1.92	1.45	-0.47	26.16	32.31	+6.15	87.78	70.36	-17.42	1.28	1.88	+0.60
Orissa and Northern Circars . . . . .	0.68	0.11	-0.57	4.36	1.60	-2.76	43.73	48.25	+4.52	2.86	0.76	-2.10
Central Provinces, South . . . . .	0.82	0.51	-0.31	1.80	0.21	-1.59	48.34	54.68	+6.34	0.93	0.15	-0.78
Berar and Khandesh . . . . .	0.47	0.07	-0.40	0.99	0.45	-0.54	35.29	47.49	+12.20	1.37	0.24	-1.13
Guzerat . . . . .	0.20	0.13	-0.07	0.41	0.06	-0.35	31.21	42.97	+11.76	0.31	0.04	-0.27
Sind and Cutch . . . . .	0.50	0.16	-0.34	0.50	0.67	+0.17	7.88	12.34	+4.46	0.22	0.06	-0.16
North Deccan . . . . .	0.20	0.06	-0.14	3.13	4.54	+1.41	25.53	36.67	+11.14	1.69	0.48	-1.21
Konkan and Ghats . . . . .	0.28	0	-0.28	1.65	5.16	+3.51	140.16	159.25	+19.09	1.12	1.02	-0.10
Malabar and Ghats . . . . .	0.51	0.14	-0.37	11.09	21.74	+10.65	98.08	115.14	+17.06	4.22	2.95	-1.27
Hyderabad . . . . .	0.16	0.01	-0.15	1.91	1.22	-0.69	29.03	48.52	+19.49	1.74	0.57	-1.17
Ceded Districts and Mysore . . . . .	0.25	0.07	-0.18	4.65	4.68	+0.03	21.51	27.41	+5.90	2.80	0.76	-2.04
Carnatic . . . . .	0.98	0.48	-0.50	4.15	2.67	-1.48	20.89	25.54	+4.65	10.76	2.67	-8.09
Nilgiris . . . . .	1.42	1.02	-0.40	9.28	9.15	-0.13	25.42	22.32	-3.10	12.52	6.74	-5.78
Arakan . . . . .	1.01	0.59	-0.42	15.09	19.24	+4.15	124.90	114.81	-10.09	3.08	2.53	-0.55
Pegu . . . . .	0.24	0	-0.24	7.96	10.88	+2.92	66.50	64.12	-2.38	3.11	1.16	-1.95
Tenasserim . . . . .	0.93	1.78	+0.85	20.91	33.94	+13.03	148.10	117.02	-31.08	2.35	2.88	+0.53
Upper Burma . . . . .	0.40	0.03	-0.37	5.49	8.34	+2.85	30.85	28.13	-2.72	1.29	1.18	-0.11
Bay Islands . . . . .	2.19	0	-2.19	18.59	20.29	+1.70	81.25	58.39	-22.86	14.64	16.11	+1.47
Mean . . . . .	1.10	0.68	-0.42	6.87	8.33	+1.46	54.72	56.34	+1.62	2.68	1.80	-0.88

TABLE XIV.—Giving average rainfall data of the 52 meteorological districts in India for the four seasons of the year 1892 and for the whole year.

PROVINCE.	Division.	JANUARY AND FEBRUARY.			MARCH TO MAY.			JUNE TO OCTOBER.			NOVEMBER AND DECEMBER.			WHOLE YEAR.		
		Average actual rainfall.	Average normal rainfall.	Variation of actual from normal.	Average actual rainfall.	Average normal rainfall.	Variation of actual from normal.	Average actual rainfall.	Average normal rainfall.	Variation of actual from normal.	Average actual rainfall.	Average normal rainfall.	Variation of actual from normal.	Average actual rainfall.	Average normal rainfall.	Variation of actual from normal.
		Inches.	Inches.	Inches.	Inches.	Inches.										
BURMA .	Tenasserim . . . . .	0.87	0.26	+0.61	36.79	24.65	+12.14	163.72	157.75	+5.97	2.83	1.59	+1.24	204.21	184.25	+19.96
	Lower Burma . . . . .	0	0.37	-0.37	11.90	12.71	-0.81	80.75	84.01	-3.26	2.57	3.95	-1.38	95.22	101.04	-5.82
	Central do. . . . .	0	0.12	-0.12	11.19	10.09	+1.10	70.56	73.11	-2.55	1.10	2.99	-1.89	82.85	86.31	-3.46
	Upper do. . . . .	0.01	?	?	7.91	?	?	30.03	?	?	1.97	?	?	39.92	?	?
	Arakan . . . . .	0	0.20	-0.20	11.18	19.90	-8.72	156.02	155.41	+0.61	1.34	4.09	-2.75	168.54	179.60	-11.06

TABLE XIV.—Giving average rainfall data of the 52 meteorological districts in India for the four seasons of the year 1892 and for the whole year—concluded.

PROVINCE.	Division.	JANUARY AND FEBRUARY.			MARCH TO MAY.			JUNE TO OCTOBER.			NOVEMBER AND DECEMBER.			WHOLE YEAR.		
		Average actual rainfall.	Average normal rainfall.	Variation of actual from normal.	Average actual rainfall.	Average normal rainfall.	Variation of actual from normal.	Average actual rainfall.	Average normal rainfall.	Variation of actual from normal.	Average actual rainfall.	Average normal rainfall.	Variation of actual from normal.	Average actual rainfall.	Average normal rainfall.	Variation of actual from normal.
		Inches.	Inches.	Inches.												
BENGAL AND ASSAM.	Eastern Bengal	0.61	1.56	-0.95	18.87	16.25	+ 2.62	59.44	70.62	-11.18	3.18	1.48	+1.70	82.10	89.91	- 7.81
	Assam (Surma)	1.84	2.35	-0.51	64.22	41.23	+ 22.99	103.65	83.55	+ 20.10	2.20	1.57	+0.63	171.01	128.70	+ 42.31
	Do. (Brahmaputra)	1.92	2.26	-0.34	33.22	22.33	+ 10.89	61.96	60.36	+ 1.60	0.76	0.95	-0.19	97.86	85.90	+ 11.96
	Deltaic Bengal	0.17	1.63	-1.46	7.52	10.59	- 3.07	39.09	48.98	- 9.89	3.42	0.62	+ 2.80	50.20	61.82	- 11.62
	Central do.	0.49	1.19	-0.70	6.90	7.37	- 0.47	38.02	48.30	-10.28	0.55	0.42	+0.13	45.90	57.28	- 11.32
	North do.	0.94	1.10	-0.16	26.79	15.12	+ 11.67	94.95	81.01	+ 13.94	0.64	0.33	+0.31	123.32	97.56	+ 25.76
	Orissa	0.21	1.27	-1.06	1.97	6.25	- 4.28	40.48	49.12	- 8.64	1.07	1.89	-0.82	49.73	58.53	- 8.80
	Chota Nagpur	1.30	1.34	-0.04	1.47	3.91	- 2.44	42.29	47.52	- 5.23	0.58	0.68	-0.10	45.64	53.45	- 7.81
NORTH-WESTERN PROVINCES AND OUDH.	Bihar (South)	1.04	0.99	+0.05	0.48	2.55	- 2.07	34.87	39.43	- 4.56	0.03	0.44	-0.41	36.42	43.41	- 6.99
	Do. (North)	0.39	1.05	-0.66	3.74	4.41	- 0.67	48.35	45.55	+ 2.80	0	0.23	-0.23	52.48	51.24	+ 1.24
	North-Western Provinces (East).	1.31	0.98	+0.33	0.13	0.96	- 0.83	36.52	35.95	+ 0.57	0.10	0.37	-0.27	38.06	38.26	- 0.20
	Oudh (South)	1.14	0.95	+0.19	0.16	0.99	- 0.83	37.56	33.71	+ 3.85	0.31	0.43	-0.12	39.17	36.08	+ 3.09
	Do. (North)	0.86	0.62	+0.24	0.22	1.55	- 1.33	38.65	35.89	+ 2.76	0.18	0.42	-0.24	39.91	38.48	+ 1.43
PUNJAB.	North-Western Provinces (Central).	1.22	0.79	+0.43	0.38	0.78	- 0.40	32.89	31.89	+ 1.00	0.21	0.40	-0.19	34.70	33.86	+ 0.84
	North-Western Provinces (West).	0.96	0.84	+0.12	0.51	0.89	- 0.38	30.02	26.69	+ 3.33	0.37	0.38	-0.01	31.86	28.80	+ 3.06
	North-Western Provinces (Submontane).	1.72	2.98	-1.26	0.66	3.04	- 2.38	42.19	41.79	+ 0.40	0.26	0.52	-0.26	44.83	48.33	- 3.50
BOMBAY AND MALABAR COAST DISTRICTS (MADRAS).	Punjab (South)	1.06	1.01	+0.05	0.63	1.23	- 0.70	18.00	11.25	+ 6.75	0.77	0.31	+0.46	20.46	13.90	+ 6.56
	Do. (Central)	0.99	1.24	-0.25	0.69	1.47	- 0.78	22.74	17.87	+ 4.87	0.68	0.34	+0.34	25.10	20.92	+ 4.18
	Do. (Submontane)	1.04	2.93	-1.89	1.16	2.59	- 1.43	33.31	24.76	+ 8.55	1.01	0.74	+0.27	36.52	31.02	+ 5.50
	Do. (Hill Districts)	2.92	6.89	-3.97	2.87	9.35	- 6.48	53.58	45.75	+ 7.83	1.30	1.50	-0.20	60.67	63.49	- 2.82
	Do. (North-West)	0.64	3.10	-2.46	1.25	4.10	- 2.84	21.50	14.95	+ 6.55	1.04	1.04	0	24.44	23.19	+ 1.25
	Do. (West)	0.36	1.05	-0.69	0.08	1.60	- 1.52	14.47	6.08	+ 8.39	0.61	0.29	+0.32	15.52	9.02	+ 6.50
CENTRAL PROVINCES AND BERAR.	Malabar	0.05	0.35	-0.30	23.88	10.01	+ 13.87	109.45	103.03	+ 6.42	2.89	4.84	-1.95	136.27	118.23	+ 18.04
	Madras (South Central)	0.73	0.28	+0.45	7.24	6.78	+ 0.46	22.66	23.89	- 1.23	1.70	5.80	-4.10	32.33	36.75	- 4.42
	Coorg	0.17	0.17	0	13.15	P	P	85.24	P	P	0.50	P	P	99.06	P	P
	Mysore	0.11	0.15	-0.04	6.53	4.84	+ 1.69	25.62	27.06	- 1.44	0.55	3.26	-2.71	32.81	35.31	- 2.50
	Konkan	0	0.09	-0.09	4.43	2.11	+ 2.32	134.26	119.56	+ 14.70	0.78	1.24	-0.46	139.47	123.00	+ 16.47
BOMBAY (NORTH).	Bombay Deccan	0	0.08	-0.08	3.58	2.81	+ 0.77	42.87	29.21	+ 13.66	0.69	1.87	-1.18	47.14	33.97	+ 13.17
	Hyderabad (North)	0.03	0.25	-0.22	1.28	1.49	- 0.21	31.26	P	P	P	P	P	P	P	P
	Khandesh	0	0.11	-0.11	0.60	1.19	- 0.59	34.67	27.05	+ 7.62	0.48	1.47	-0.99	35.75	29.82	+ 5.93
RAJPUTANA AND CENTRAL INDIA.	Berar	0.06	0.55	-0.49	0.18	1.85	- 1.67	52.09	34.77	+ 17.32	0.37	1.26	-0.89	52.70	38.43	+ 14.27
	Central Provinces (West)	0.56	0.77	-0.21	0.14	1.00	- 0.86	54.77	41.32	+ 13.45	0.35	0.87	-0.52	55.82	43.96	+ 11.86
	Ditto (Central)	0.82	0.78	+0.04	0.28	1.30	- 1.02	47.52	50.29	- 2.77	0.20	0.63	-0.43	48.82	53.00	- 4.18
	Ditto (East)	0.23	0.79	-0.56	0.05	2.02	- 1.97	55.28	48.21	+ 7.07	1.80	0.80	+1.00	57.36	51.82	+ 5.54
MADRAS.	Guzerat	0.02	0.08	-0.06	0.05	0.32	- 0.27	51.97	44.88	+ 7.09	0.16	0.23	-0.07	52.20	45.51	+ 6.69
	Kathiawar	0.05	0.17	-0.12	0.34	0.33	+ 0.01	29.42	24.17	+ 5.25	0.02	0.12	-0.10	29.83	24.79	+ 5.04
	Sind	0.18	0.71	-0.53	0.06	0.59	- 0.53	10.95	4.97	+ 5.98	0.07	0.18	-0.11	11.26	6.45	+ 4.81
MADRAS.	Central India (East)	1.30	0.99	+0.31	0.29	0.72	- 0.43	42.85	42.54	+ 0.31	0.39	0.83	-0.44	44.83	45.08	- 0.25
	Rajputana (East), Central India (West).	0.86	0.57	+0.29	0.38	1.13	- 0.75	32.42	26.68	+ 5.74	0.39	0.27	+0.12	34.05	28.65	+ 5.40
	Rajputana (West)	0.48	0.39	+0.09	0.82	0.61	+ 0.21	20.69	10.81	+ 9.88	0.39	0.04	+0.35	22.38	11.85	+ 10.53
	East Coast (North)	0.08	0.42	-0.34	1.30	3.59	- 2.29	46.72	31.32	+ 15.40	0.55	4.53	-3.98	48.65	39.86	+ 8.79
	Do. (do.) (a)	0	0.24	-0.24	1.89	P	P	57.11	52.63	+ 4.48	0.20	3.17	-2.97	59.20	P	P
	Hyderabad (South)	0	0.22	-0.22	1.18	2.01	- 0.83	42.61	25.41	+ 17.20	2.57	0.71	+1.86	46.36	28.35	+ 18.01
	Madras (Central)	0.02	0.08	-0.06	1.29	2.47	- 1.18	29.43	21.07	+ 8.36	0.80	2.84	-2.04	31.54	26.46	+ 5.08
	East Coast (Central)	0.10	0.51	-0.41	0.55	2.21	- 1.66	35.28	23.78	+ 11.50	1.37	11.08	-9.71	37.30	37.58	- 0.28
Do. (South)	0.33	0.77	-0.44	1.05	4.19	- 3.14	24.78	22.89	+ 1.89	3.05	14.22	-11.17	29.21	42.07	- 12.86	
	Madras (South)	1.05	1.19	-0.14	4.80	5.28	- 0.48	9.45	12.32	- 2.87	2.03	9.95	-7.92	17.33	28.74	- 11.41

TABLE XV.—Giving average actual and normal number of rainy days in 52 meteorological districts for the four seasons of the year 1892 and for whole year.

PROVINCE.	DIVISION.	JANUARY AND FEBRUARY.			MARCH TO MAY.			JUNE TO OCTOBER.			NOVEMBER AND DECEMBER.			WHOLE YEAR.		
		Average actual number of rainy days.	Average normal number of rainy days.	Variation of actual from normal.	Average actual number of rainy days.	Average normal number of rainy days.	Variation of actual from normal.	Average actual number of rainy days.	Average normal number of rainy days.	Variation of actual from normal.	Average actual number of rainy days.	Average normal number of rainy days.	Variation of actual from normal.	Average actual number of rainy days.	Average normal number of rainy days.	Variation of actual from normal.
BURMA	Tenasserim . . . . .	1.4	?	?	40.1	?	?	102.9	?	?	6.6	?	?	151.0	?	?
	Lower Burma . . . . .	0	?	?	19.0	?	?	107.6	?	?	6.6	?	?	133.2	?	?
	Central do. . . . .	0	?	?	13.8	?	?	83.1	?	?	2.4	?	?	99.3	?	?
	Upper do. . . . .	0	?	?	15.3	?	?	45.6	?	?	2.1	?	?	63.0	?	?
	Arakan . . . . .	0	?	?	19.6	?	?	103.2	?	?	1.9	?	?	124.7	?	?
BENGAL AND ASSAM.	Eastern Bengal . . . . .	1.3	2.8	-1.5	19.1	19.9	-0.8	72.3	74.8	-2.5	2.4	1.0	+0.5	95.1	99.4	-4.3
	Assam (Surma) . . . . .	3.0	3.6	-0.6	38.9	37.1	+1.8	94.0	83.6	+11.3	2.8	2.1	+0.7	139.6	126.4	+13.2
	Do. (Brahmaputra) . . . . .	6.1	6.6	-0.5	37.7	34.6	+3.1	71.8	67.9	+3.9	1.8	2.4	-0.6	117.4	111.5	+5.9
	Deltaic Bengal . . . . .	0.5	2.7	-2.2	11.9	14.3	-2.4	57.6	63.1	-5.5	2.2	1.4	+0.8	72.2	81.5	-9.3
	Central do. . . . .	1.1	2.3	-1.2	11.4	10.9	+0.5	52.8	60.9	-8.1	0.8	1.0	-0.2	66.1	75.1	-9.0
	North do. . . . .	1.8	2.4	-0.6	26.2	17.8	+8.4	71.8	69.3	+2.5	1.3	0.8	+0.5	101.1	90.3	+10.8
	Orissa . . . . .	0.6	2.2	-1.6	2.5	9.6	-7.1	59.1	59.5	-0.4	1.5	2.9	-1.4	63.7	74.2	-10.5
	Chota Nagpur . . . . .	3.1	2.7	+0.4	3.1	7.0	-3.9	55.0	63.0	-8.0	0.6	1.4	-0.8	61.8	74.1	-12.3
	Bihar (South) . . . . .	2.2	2.4	-0.2	1.2	4.2	-3.0	47.0	48.1	-1.1	0.1	0.8	-0.7	50.5	55.5	-5.0
Do. (North) . . . . .	0.9	2.4	-1.5	6.5	6.2	+0.3	50.1	49.1	+1.0	0	0.7	-0.7	57.5	58.4	-0.9	
NORTH-WESTERN PROVINCES AND OUDH.	North-Western Provinces (East). . . . .	3.4	2.2	+1.2	0.4	2.1	-1.7	44.7	40.9	+3.8	0.1	0.6	-0.5	48.6	45.8	+2.8
	Oudh (South) . . . . .	2.7	2.0	+0.7	0.5	2.1	-1.6	41.5	37.8	+3.7	0.9	0.7	+0.2	45.6	42.6	+3.0
	Do. (North) . . . . .	2.7	2.1	+0.6	0.4	3.1	-2.7	42.5	38.1	+4.4	0.8	0.7	+0.1	46.4	44.0	+2.4
	North-Western Provinces (Central). . . . .	2.4	1.9	+0.5	1.1	1.9	-0.8	39.6	35.5	+4.1	0.6	0.5	+0.1	43.7	39.8	+3.9
	North-Western Provinces (West). . . . .	2.0	2.1	-0.1	1.2	2.5	-1.3	35.2	30.7	+4.5	0.9	0.6	+0.3	39.3	35.9	+3.4
North-Western Provinces (Submontane). . . . .	3.5	4.5	-1.0	2.0	5.2	-3.2	45.4	39.5	+5.9	0.5	0.9	-0.4	51.4	50.1	+1.3	
PUNJAB	Punjab (South) . . . . .	2.6	2.3	+0.3	1.6	2.6	-1.0	22.1	13.9	+8.2	1.5	0.5	+1.0	27.8	19.3	+8.5
	Do. (Central) . . . . .	2.7	2.7	0	1.8	3.2	-1.4	27.9	19.4	+8.5	1.1	0.7	+0.4	33.5	26.0	+7.5
	Do. (Submontane) . . . . .	2.8	4.9	-2.1	2.1	4.9	-2.8	32.3	24.0	+8.3	1.4	1.1	+0.3	38.6	34.9	+3.7
	Do. (Hill Districts) . . . . .	5.7	8.6	-2.9	5.7	13.2	-7.5	52.4	46.0	+6.4	2.3	2.1	+0.2	66.1	69.9	-3.8
	Do. (North-West) . . . . .	2.3	5.5	-3.2	2.4	6.9	-4.5	21.9	18.0	+3.9	1.2	1.3	-0.1	27.8	31.7	-3.9
	Do. (West) . . . . .	1.3	2.4	-1.1	0.4	3.2	-2.8	16.0	7.9	+8.1	1.5	0.5	+1.0	19.2	14.0	+5.2
BOMBAY AND MALABAR COAST DISTRICTS (MADRAS).	Malabar . . . . .	0.2	0.5	-0.3	24.1	12.4	+11.7	109.4	100.8	+8.6	3.8	7.0	-3.2	137.5	120.7	+16.8
	Madras (South Central) . . . . .	1.0	0.6	+0.4	13.6	10.0	+3.6	30.1	27.5	+2.6	3.0	8.5	-5.5	47.2	46.6	+0.6
	Coorg . . . . .	0.4	?	?	20.5	?	?	98.2	?	?	1.5	?	?	120.6	?	?
	Konkan . . . . .	0	0.2	-0.2	3.6	?	+0.4	103.2	94.3	+8.9	1.5	2.0	-0.5	108.3	99.7	+8.6
	Bombay Deccan . . . . .	0	0.3	-0.3	7.0	5.7	+1.3	58.1	46.1	+12.0	1.4	3.1	-1.7	66.5	55.2	+11.3
Khandesh . . . . .	0.1	0.3	-0.2	1.6	2.1	-0.5	51.9	42.1	+9.8	1.0	2.3	-1.3	54.6	46.8	+7.8	
CENTRAL PROVINCES AND BERAR.	Berar . . . . .	0.2	?	?	0.7	?	?	62.5	?	?	0.7	?	?	64.1	?	?
	Central Provinces (West) . . . . .	1.7	1.4	+0.3	0.5	2.2	-1.7	61.7	49.1	+12.6	0.7	1.2	-0.5	64.6	53.9	+10.7
	Do. (Central) . . . . .	1.9	1.7	+0.2	1.0	2.6	-1.6	59.5	52.6	+6.9	0.2	1.1	-0.9	62.6	58.0	+4.6
	Do. (East) . . . . .	0.7	1.6	-0.9	0.2	3.6	-3.4	58.2	49.0	+9.2	0.1	1.0	-0.9	59.2	55.2	+4.0
BOMBAY (NORTH).	Guzerat . . . . .	0.1	0.2	-0.1	0.1	0.5	-0.4	54.8	48.0	+6.8	0.3	0.5	-0.2	55.3	49.2	+6.1
	Kathiawar . . . . .	0.1	0.2	-0.1	0.5	0.5	0	38.0	27.7	+10.3	0.1	0.2	-0.1	38.7	28.6	+10.1
	Sind . . . . .	0.6	?	?	0.2	?	?	9.6	?	?	0.3	?	?	10.7	?	?
RAJPUTANA AND CENTRAL INDIA.	Central India (East) . . . . .	2.4	?	?	0.8	?	?	46.3	?	?	0.8	?	?	50.3	?	?
	Rajputana (East) Central India (West). . . . .	1.6	?	?	1.0	?	?	36.7	?	?	0.9	?	?	40.2	?	?
	Rajputana (West) . . . . .	1.1	?	?	0.9	?	?	25.0	?	?	0.8	?	?	27.8	?	?
MADRAS	East Coast (North) . . . . .	0.1	0.8	-0.7	3.5	5.8	-2.3	56.4	43.1	+13.3	0.9	4.3	-3.4	60.9	54.0	+6.9
	Do. (do.) (a) . . . . .	0	0.6	-0.6	6.5	9.7	-3.2	83.0	67.6	+15.4	1.5	5.3	-3.8	91.0	82.2	+8.8
	Madras (Central) . . . . .	0.1	0.2	-0.1	3.4	4.2	-0.8	43.7	29.5	+14.2	1.4	4.2	-2.8	48.6	38.1	+10.5
	East Coast (Central) . . . . .	0.1	0.7	-0.6	1.3	3.0	-1.7	40.7	27.2	+13.5	2.8	10.5	-7.7	44.9	41.4	+3.5
	Do. (South) . . . . .	0.8	1.0	-0.2	3.6	4.8	-1.2	35.0	29.8	+5.2	5.4	14.0	-8.6	44.8	49.6	-4.8
	Madras (South) . . . . .	1.6	1.9	-0.3	7.3	7.7	-0.4	15.8	18.9	-3.1	4.5	13.2	-8.7	29.2	41.7	-12.5

The distribution of rainfall in India month by month during the year 1892 has been fully described in the monthly reviews under the heading "Rainfall."

The more important features and irregularities in the distribution of the rainfall season by season during the year 1892 are pointed out in the following paragraphs:—

**I. Cold weather period.**—The rainfall of this period was small in amount and considerably below the normal, more especially in Upper India. There were four disturbances in the month of January, but they were very feeble and gave little rain. The only important storm of this period crossed Northern India between the 12th and 15th of February. It gave light to moderate rain to the whole of Northern India. Thundershowers were also received during three periods of slight disturbance in Northern India in that month. They gave the largest amounts of rain in Bengal and Assam. The following gives a summary of the rainfall data of the period:—

PROVINCE.	COLD WEATHER PERIOD.			Percentage variation.
	Variation of mean actual rainfall from normal in December 1891.	Variation of mean actual rainfall of January and February 1892 from normal.	Variation for period December 1891 to February 1892.	
	Inches.	Inches.	Inches.	
Burma . . . . .	+0.12	-0.02	+0.10	+26
Bengal and Assam . . . . .	-0.36	-0.58	-0.94	-51
North-Western Provinces and Oudh . . . . .	-0.44	+0.01	-0.43	-26
Punjab . . . . .	-0.42	-1.06	-1.47	-64
Bombay and Malabar Coast Districts (Madras) . . . . .	-0.22	-0.05	-0.27	-23
Central Provinces and Berar . . . . .	-0.50	-0.31	-0.81	-66
Bombay (North) . . . . .	-0.05	-0.24	-0.29	-78
Rajputana and Central India . . . . .	-0.25	+0.23	-0.02	-2
Madras . . . . .	0.42	-0.26	+0.16	+7

The deficiency was large in the Punjab and moderate in Bengal and the Central Provinces. Elsewhere it was small in amount. The most important feature in the rainfall distribution of the period was the very deficient precipitation in the hill districts of the Punjab and North-Western Provinces where the weather was exceptionally dry. The following gives data for a few stations:—

PROVINCE.	STATION.	COLD WEATHER RAINFALL, DECEMBER 1891 TO FEBRUARY 1892.		
		Actual.	Variation from normal.	Percentage variation.
		Inches.	Inches.	
Baluchistan . . . . .	Quetta . . . . .	1.76	-2.09	-54
	Murree . . . . .	2.00	-0.78	-28
Punjab . . . . .	Dalhousie . . . . .	3.90	-3.78	-49
	Simla . . . . .	2.49	-1.33	-35
	Kilba* . . . . .	0.47	-12.09	-97
	Mussoorie . . . . .	2.20	-2.80	-56
North-Western Provinces . . . . .	Naini Tal . . . . .	4.55	-2.01	-31
	Almora . . . . .	2.33	-1.85	-44

\* The rainfall data of this station are for the period December and January.

**II. The hot weather period.**—This period was even drier than usual over by far the greater part of the interior. March was exceptionally dry. Assam, Lower Burma, and Tenasserim were the only areas which received moderate rain in that month. Weather was slightly more disturbed than usual in April and May with frequent thunderstorms in North-Eastern and Southern India. Assam, Tenasserim, Malabar, Mysore and South Madras received larger amounts than usual. The fall was exceptionally heavy in the Cachar and Sylhet districts of Assam, and the Assam hill districts. Very heavy rain was also received in Assam and North Bengal in May and moderate rain in East and South Bengal.

The first burst of the monsoon commenced on the Malabar Coast about the 24th May. It extended to North Kanara on the 26th and Ratnagiri on the 28th. The greater part of Southern India and the Deccan received showers during this period.

The most important features of the rainfall of this period were as follows:—

**1st.**—Excessive rain in Assam during the whole period and in North Bengal during the latter half of the period. The following gives data in illustration:—

Meteorological Division.	MARCH.		APRIL.		MAY.		Average actual rainfall of period.	Variation from normal.	Percentage variation.
	Actual rainfall of the month.	Variation from normal.	Actual rainfall of the month.	Variation from normal.	Actual rainfall of the month.	Variation from normal.			
Assam (Surma) Do. (Bramah putra).	10.97	+2.61	31.48	+17.55	21.77	+2.83	64.22	+22.99	+56
North Bengal	4.25	+0.69	11.13	+4.20	17.83	+6.00	33.22	+10.89	+49
	1.32	-0.18	6.14	+2.76	19.33	+9.09	26.79	+11.67	+77

**2nd.**—Heavier rain than usual in the west coast districts south of Ratnagiri in the month of May due to the very early advance of the monsoon. The following gives data:—

COLLECTORATE OR DISTRICT.	Average actual rainfall of May 1892.	Variation from normal rainfall of month.	Variation expressed as percentage.
	Inches.	Inches.	
Malabar . . . . .	16.47	+7.97	+94
North Canara . . . . .	8.70	+5.31	+157
South Canara . . . . .	17.87	+12.47	+231
Ratnagiri . . . . .	4.07	+2.50	+159

3rd.—The rainfall was more or less deficient in the remainder of India. The following gives mean data:—

	MARCH TO MAY.		
	Average actual rainfall.	Variation from normal.	Percentage variation.
	Inches.	Inches.	
Bengal and Orissa (including North Bengal)	8.80	-1.30	-13
Chota Nagpur . . . . .	1.47	-2.44	-62
Bihar . . . . .	2.11	-1.37	-40
North-Western Provinces and Oudh . . . . .	0.34	-1.03	-75
Punjab . . . . .	0.76	-1.45	-66

4th.—The rainfall was seriously in defect in the hill districts of the Punjab and North-Western Provinces. The following data for several hill stations illustrate this feature:—

PROVINCE.	STATION.	TOTAL.		Percentage variation.
		Total rainfall from 1st March to 31st May 1892.	Variation from normal.	
		"	"	"
Baluchistan . . . . .	Quetta . . . . .	0.85	-2.69	-76
Punjab . . . . .	Simla . . . . .	2.29	-6.74	-75
	Murree . . . . .	5.15	-5.66	-53
	Dharmasala . . . . .	2.95	-5.40	-65
	Kilba . . . . .	2.19	-20.23	-90
North-Western Provinces.	Ranikhet . . . . .	2.31	-4.23	-65
	Almora . . . . .	1.28	-4.87	-80
	Naini Tal . . . . .	1.46	-6.33	-82

**III. South-West monsoon.**—The first burst of the monsoon commenced slightly earlier than usual on the Bombay Coast, and extended very rapidly over the whole of India excepting the Punjab and West Rajputana. This advance was feeble, and the introduction of abnormal conditions in the Arabian Sea at the end of the second week of the month was followed by a prolonged break in the rains which lasted until the first week of July. The Bengal current strengthened in the last week of June and the Bombay current in the first week of July; and humid currents were rapidly re-established over Northern and Central India. They prevailed with unusual steadiness until the last week of September, when they quickly retreated on the 25th and 26th from North-Western India. The Bengal current was considerably stronger than usual during the whole period, and the Bombay current in the months of July and September. The distribution of the rainfall varied considerably from month to month.

The following gives the more important features of each month.

(1) *June.*—The rainfall of the month was more or less in defect over nearly the whole of Northern and Central India and the North Deccan. The deficiency was greatest in those districts which usually receive general rain during the greater part of the month from the Bombay current, *viz.*, the western and central districts of Malabar, Coorg, Konkan, Central Provinces, Guzerat, and Kathiawar. The following gives data for these areas:—

AREA.	Actual average rainfall of month.	Variation from normal.	Percentage variation.
	Inches.	Inches.	
Malabar . . . . .	16.49	-17.32	-51
Coorg . . . . .	8.97	-15.58	-63
Konkan . . . . .	19.40	-12.70	-40
Central Provinces (West) . . . . .	4.64	-3.11	-40
" " (Central) . . . . .	4.45	-5.14	-54
Guzerat . . . . .	4.50	-2.85	-38
Kathiawar . . . . .	1.44	-2.19	-60

The table gives data for all the meteorological divisions in which the rainfall was more than 30 per cent. below the normal. The deficiency in the areas which receive their rainfall from the Bay of Bengal was generally small in amount and of little importance. As frequently happens during a break in the rains in Northern and Central India frequent rain fell during this period in Southern India. This rain fell chiefly as thundershowers in the Deccan, and the interior districts of Southern India. Hyderabad, Mysore, and the whole of Madras, with the exception of Malabar, obtained rain in moderate excess. The following gives data for this area of increased rainfall:—

DIVISION.	Average actual rainfall of month of June 1892.	Variation from normal of June.	Percentage variation.
	Inches.	Inches.	
Mysore . . . . .	4.60	+1.17	+34
Hyderabad . . . . .	7.45	+2.49	+50
Madras . . . . .	4.74	+0.85	+22

The chief features of the rainfall in June were—

- (1) The early commencement and rapid extension of the rains in the first week of the month.
- (2) The prolonged break in the third and fourth weeks which was equivalent so far as agricultural operations were concerned to a delay of at least three weeks in the commencement of the monsoon.
- (3) Very deficient rainfall in the areas supplied by the Bombay current, more especially the West Coast districts, Berar and the Central Provinces.

(4) Increased and favourable rainfall. over the whole of the Peninsula south of Lat. 18° N. except the West Coast districts.

*July.*—The Bombay current strengthened rapidly during the first week of the month and both currents were unusually strong and steady during the month. The humid currents hence received their extension to their furthest limits in the Punjab early in the season, and as usually happens when both currents are strong, Upper India received exceptionally heavy rain. The rainfall of the month was in general excess, the only area in which there was a largish defect was Guzerat which received an average of 14·24 inches or 25 per cent. less than the normal fall (18·86 inches). Over the greater part of India the variations from the normal fall were neither large nor important. The rainfall of the month was largely in excess in four areas, *viz.*, Malabar, the Central Provinces, North Bengal, West Rajputana, Sind, and the West Punjab. The excess in the first two areas was due to unusually frequent and heavy rain. In North Bengal it was chiefly due to an excessive downpour from the 5th to the 8th. An average of 22 inches was received in the Jalpaiguri and Kuch Bihar districts during that period of 96 hours. The following gives comparative data for three of these areas of excessive rainfall :—

METEOROLOGICAL DIVISION.	Average actual rainfall of month.	Variation from normal.	Percentage variation.
	Inches.	Inches.	
Malabar . . . . .	47·04	+16·13	+52
Central Provinces { (West) . . . . .	22·72	+10·11	+80
(East) . . . . .	26·16	+10·35	+65
North Bengal . . . . .	35·68	+15·65	+78

The most remarkable features of the rainfall of the month was the excessive precipitation in the fourth area including the West Punjab, Sind, and West Rajputana.

The following gives data for stations in that area :—

PROVINCE.	STATION.	Actual rainfall of month.	Variation from normal.	Ratio of actual to normal.
		Inches.	Inches.	
Punjab . . . . .	Mooltan . . . . .	7·47	+5·94	4·9
	Dera Ismail Khan . . . . .	10·50	+8·21	4·6
	Bannu . . . . .	8·97	+7·04	4·6
Sind . . . . .	Shah bandar . . . . .	15·96	+12·46	4·6
	Karachi . . . . .	10·99	+8·09	3·8
Rajputana (West) {	Hyderabad . . . . .	6·89	+4·20	2·6
	Bickaneer . . . . .	7·27	+3·80	2·1
	Jeysulmir . . . . .	5·89	+3·75	2·8

The excess was hence greatest in the Indus Valley, over the greater part of which from four to five times the normal fall of the month was received. A large portion of the rainfall was cyclonic, *i.e.*, occurred during or immediately after the passage of the cyclonic storm of the 22nd to the 29th through the area.

*August.*—The rains held with unusual steadiness throughout the month of August. The Bengal current was directed chiefly towards Upper India and hence the rainfall of the month was in moderate defect in Burma and Bengal, whilst the Gangetic Plain and the Punjab received excessive rain. The eastern half of the monsoon trough of low pressure was displaced further south than usual, and apparently as a result of this, the Peninsula received heavier rainfall than usual from the Bombay current.

The chief features of the month were the excessive rainfall in the North-Western Provinces, the Punjab, Sind, and Rajputana, due chiefly to the Bengal current, and the abnormally heavy rainfall in the Konkan, Berar, Hyderabad, and (to a less extent) Madras. The following gives comparative data for these areas :—

AREA.	Average actual rainfall of month.	Normal rainfall.	Variation from normal.	Percentage variation.
	Inches.	Inches.	Inches.	
Punjab . . . . .	10·16	4·93	+5·23	+106
North-Western Provinces	16·57	10·57	+6·00	+57
Sind . . . . .	4·30	1·94	+2·36	+122
Konkan . . . . .	42·64	23·96	+18·68	+78
Hyderabad . . . . .	15·27	7·23	+8·04	+111
Berar . . . . .	15·35	7·49	+7·86	+105
Madras . . . . .	7·33	5·79	+1·54	+27
Rajputana . . . . .	10·35	7·08	+3·27	+46

The West Punjab, Baluchistan, Sind, and West Rajputana received much heavier rain than usual. It was rather irregularly distributed as it was chiefly due to heavy local downpours, chiefly during the periods of disturbance. The following gives the most noteworthy falls :—

PROVINCE.	STATION.	Actual rainfall of month.	Normal rainfall.	Variation from normal.	Percentage variation.
		Inches.	Inches.	Inches.	
WEST PUNJAB {	Peshawar . . . . .	15·73	1·81	+13·92	+769
	Lala Musa . . . . .	25·23	7·26	+17·97	+247
	Naushahra . . . . .	16·50	2·88	+13·62	+473
	Kohat . . . . .	14·99	2·90	+12·09	+417

Further details of this excessive rainfall will be found on pages 305-7 of the August Review. The deficiency in Burma was not large or important, barely averaging 25 per cent. It was large over the greater part of South-West Bengal and Chota Nagpur. The districts of Hooghly, Midnapur, Burdwan, Bankura, and Chota Nagpur received less than half their normal fall. North Bengal and North

Bihar on the other hand obtained abnormally heavy rain, and the total amounts were in the northern districts nearly double the ordinary rainfall of the period.

*September.*—Both currents were stronger than usual during the month. The Bengal current was however largely diverted to Lower Burma, which area hence received favourable and abundant rainfall. The distribution of the rainfall during the month was largely determined by three cyclonic storms which formed in the Bay of Bengal. They advanced further to the west and by a more southerly course than usual, and hence Rajputana (East) and the Deccan received excessive rainfall. The West Coast districts and Southern India obtained slightly larger amounts than usual. The chief features of the rainfall distribution of the month were as follows:—

*1st.*—The rainfall of the month was largely in excess in Tenasserim, Guzerat, Kathiawar, Khandesh and Rajputana, and the submontane districts of the Punjab. The excess in these areas varied from 85 per cent. in Khandesh and 149 per cent. in Kathiawar to 330 per cent. in West Rajputana.

*2nd.*—It was in moderate excess in Burma, the Bombay Deccan, Konkan, Central India, Berar, the Central Provinces, Hyderabad, the hill districts of the Punjab and the northern and central districts of Madras.

*3rd.*—It was in defect to a large extent in North Bengal and Bihar, which obtained barely half their normal amount. The deficiency was most pronounced in the Purnea and Darbhanga districts and averaged 67 per cent. The deficiency exceeded 50 per cent. in the following districts for which data are given:—

DISTRICT.	RAINFALL.			
	Actual average, September 1892.	Normal average, September.	Variation from normal.	Percentage variation.
	Inches.	Inches.	Inches.	
Rajshahi . . . . .	4.72	11.26	—6.54	—58
Malda . . . . .	4.68	10.52	—5.84	—55
Dinajpur . . . . .	5.49	11.17	—5.68	—51
Rangpur . . . . .	6.19	13.00	—6.81	—52
Kuch Bihar . . . . .	9.66	21.95	—12.29	—56
Purnea . . . . .	4.50	13.53	—9.03	—67
Darbhanga . . . . .	3.19	9.25	—6.06	—66

The rainfall was very deficient also in the North-Western Provinces, more especially in Oudh, which obtained only 46 per cent. of its normal amount, and the eastern and central districts, where the fall was little more than half

the normal of the month (56 per cent.). The deficiency exceeded 50 per cent. in amount in the following districts:—

DISTRICT.	RAINFALL.		
	Average actual, September 1892.	Variation from normal.	Percentage variation.
	Inches.	Inches.	
Gonda . . . . .	2.77	—5.50	—67
Bara Banki . . . . .	2.87	—3.81	—57
Sitapur . . . . .	2.27	—4.29	—65
Kheri . . . . .	1.98	—5.55	—74
Rai Bareilly . . . . .	2.46	—4.67	—65
Hardoi . . . . .	2.20	—3.51	—61
Bulandshar . . . . .	1.92	—3.11	—62
Shahjahanpur . . . . .	1.12	—4.94	—82
Moradabad . . . . .	2.69	—3.69	—58
Gorakhpur . . . . .	3.93	—4.29	—52
Basti . . . . .	3.40	—5.14	—60

*4th.*—Moderate deficiency in South and Central Madras. The deficiency was most marked in the Coimbatore, Salem, and Tinnevely districts. The following gives data for these three districts:—

DISTRICT.	RAINFALL.		
	Average actual, September 1892.	Variation from normal.	Percentage variation.
	Inches.	Inches.	
Tinnevely . . . . .	0.17	—1.10	—87
Coimbatore . . . . .	0.79	—2.13	—73
Salem . . . . .	1.82	—3.68	—67

The monsoon currents withdrew from North-Western India on the 26th and 27th of the month.

*October.*—The monsoon currents withdrew from North-Western and Central India and the Gangetic plain in the last week of the previous month, and hence the month of October was practically rainless over nearly the whole of the Punjab, Sind, Rajputana, Central India, the North-Western Provinces, and part of North Bihar and North Bengal. The rainfall of the month was below the average over the whole of that area, but the deficiency was serious only in the eastern districts of the North-Western Provinces, North Bihar, and North Bengal.

The following gives data for these three areas of most deficient rainfall:—

DISTRICT.	RAINFALL.		
	Average actual, October 1892.	Variation from normal.	Percentage variation.
	Inches.	Inches.	
Bihar (North) . . . . .	0·20	—3·32	—94
Bengal (North) . . . . .	1·67	—3·21	—65
North-Western Provinces (East) . . . . .	0·15	—2·08	—93

The rainfall distribution of the month in the Peninsula and Burma was mainly determined by the three cyclonic storms of the month. They gave moderate rain to Arakan and very heavy rain to the Northern Madras Coast districts, the Deccan, and Konkan, and consequently in all these areas the rainfall of the month was more or less in excess.

The following gives data in illustration:—

DISTRICT.	RAINFALL.		
	Average actual, October 1892.	Variation from normal.	Percentage variation.
	Inches.	Inches.	
Arakan . . . . .	12·98	+5·23	+67
Madras, East Coast { (North)	15·55	+8·44	+119
{ (North) (a)	10·13	+5·37	+113
Hyderabad (South) . . . . .	7·84	+5·30	+209
Bombay Deccan . . . . .	8·93	+3·91	+78
Konkan . . . . .	8·82	+3·30	+60

The rainfall of the month was most excessive in the following coast districts of Madras:—

DISTRICT.	RAINFALL.		
	Average actual, October 1892.	Variation from normal.	Percentage variation.
	Inches.	Inches.	
Nellore . . . . .	11·74	+1·99	+20
Kistna . . . . .	14·93	+8·72	+140
Godavari . . . . .	20·02	+12·31	+160
Vizagapatam . . . . .	13·85	+7·52	+119
Ganjam . . . . .	12·56	+4·74	+61

In the interior the excess was greatest in Kurnool which obtained double its normal amount.

This peculiar distribution of rainfall in North Madras was associated with deficient rainfall in the South Madras

Coast districts. The deficiency was most marked in the following districts, for which data are given below:—

DISTRICT.	RAINFALL.		
	Average actual, October 1892.	Variation from normal.	Percentage variation.
	Inches.	Inches.	
Chingleput . . . . .	4·52	—5·37	—54
North Arcot . . . . .	5·25	—2·14	—29
South Arcot . . . . .	2·72	—6·08	—69
Tanjore . . . . .	4·47	—4·45	—50

As in the previous month, Salem and the Tinnevely districts continued to be areas of very deficient rainfall. The following gives data for these two districts:—

DISTRICT.	RAINFALL.		
	Average actual, October 1892.	Variation from normal.	Percentage variation.
	Inches.	Inches.	
Salem . . . . .	4·21	—2·05	—33
Tinnevely . . . . .	2·70	—2·92	—52

The following gives the most important features of the rainfall of the south-west monsoon period from June to October:—

1st—The rainfall was normal in amount in Burma, Orissa and the Assam valley. It was in moderately large excess in Cachar, North Bengal, and North Bihar, but was more or less considerably in defect over the remainder of Bengal and in South Bihar and Chota Nagpur. The following gives comparative data:—

AREAS OF EXCESSIVE RAINFALL.	DIVISION.	Average actual rainfall of period June to October 1892.	Variation from normal.	Percentage variation.
		Inches.	Inches.	
AREAS OF EXCESSIVE RAINFALL.	Assam (Surma) . . . . .	103·65	+20·10	+24
	North Bengal . . . . .	94·95	+13·94	+17
	North Behar . . . . .	48·35	+2·80	+6
AREAS OF DEFICIENT RAINFALL.	East Bengal . . . . .	59·44	—11·18	—16
	Deltaic Bengal . . . . .	39·09	—9·89	—20
	Central „ . . . . .	38·02	—10·28	—21
	Chota Nagpur . . . . .	42·29	—5·23	—11
	Behar South . . . . .	34·87	—4·56	—12

The deficiency was hence large in amount in Deltaic and Central Bengal. It was greatest in the districts for which data are given in the following table :—

DISTRICT.	Actual rain-fall of period June to October 1892.	Variation from normal.	Percentage variation.
	Inches.	Inches.	
Burdwan . . . . .	34.56	-10.86	-24
Midnapore . . . . .	29.92	-20.79	-41
Hooghly . . . . .	32.22	-16.95	-34
Bankura . . . . .	35.57	-13.19	-27

2nd.—The rainfall was in moderate to large excess over the whole of the North-Western Provinces, the Punjab, Sind, Rajputana, and Central India. The excess was more than 20 per cent. in the meteorological divisions in this area for which data are given in the following table :—

PROVINCE.	Average actual rain-fall of period June to October 1892.	Variation from normal.	Percentage variation.
	Inches.	Inches.	
Punjab { (South) . . . . .	18.00	+6.75	+ 60
{ (Central) . . . . .	22.74	+4.87	+ 27
{ (Submontane) . . . . .	33.31	+8.55	+ 35
{ (North-West) . . . . .	21.50	+6.55	+ 44
{ (West) . . . . .	14.47	+8.30	+138
Sind . . . . .	10.95	+5.98	+120
Rajputana { (West) . . . . .	20.69	+9.88	+ 91
{ (East) . . . . .	32.42	+5.74	+ 22
Kathiawar . . . . .	29.42	+5.25	+ 22

One of the most remarkable features of the south-west monsoon of 1892 was the excessive rainfall in the West Punjab and Sind and to a slightly less extent in West Rajputana. The centre of this heavy downpour which extended into Baluchistan was the Indus Valley. The following gives data for stations at which the rainfall was heaviest :—

STATION.	Actual rain-fall of period June to October 1892.	Variation from normal.	Percentage variation.
	Inches.	Inches.	
Peshawar . . . . .	20.18	+15.77	+360
Bannu . . . . .	12.92	+ 6.63	+106
Kohat . . . . .	19.73	+10.29	+109
Lala Musa . . . . .	34.37	+13.86	+ 68
Bhakkar . . . . .	19.41	+14.75	+317
Dera Ismail Khan . . . . .	13.11	+ 8.44	+181
Mooltan . . . . .	15.50	+11.22	+262
Shahbandar . . . . .	16.35	?	?
Karachi . . . . .	11.58	?	?

3rd.—The rainfall was normal or in slight excess in Central India and the eastern districts of the Central Provinces. It was largely in excess in the

areas to the south and more especially in Berar, the western districts of the Central Provinces, Khandesh, the Bombay Deccan and Hyderabad. The following gives data for those areas in which the rainfall was more than 20 per cent. in excess :—

PROVINCE.	Average actual rain-fall of period June to October 1892.	Variation from normal.	Percentage variation.
	Inches.	Inches.	
Central Provinces (West) . . . . .	54.77	+13.45	+32
Berar . . . . .	52.09	+17.32	+50
Khandesh . . . . .	34.67	+ 7.62	+28
Bombay Deccan . . . . .	42.87	+13.66	+47
Hyderabad { (North) . . . . .	31.26	?	?
{ (South) . . . . .	42.61	+17.20	+68

4th.—The rainfall was in moderate excess in the West Coast districts. The excess averaged 12 per cent. in the Konkan and 6 per cent. in Malabar, and hence decreased in amount southwards.

5th.—The rainfall was in excess over the whole of Madras with the exception of the southern districts in which it was in moderate defect. The following gives data for that Presidency :—

PROVINCE.	Average actual rain-fall of period June to October 1892.	Variation from normal.	Percentage variation.
	Inches.	Inches.	
Madras { East Coast (North) . . . . .	46.72	+15.40	+49
{ Central . . . . .	29.43	+ 8.36	+40
{ East Coast (Central) . . . . .	35.28	+11.50	+48
{ East Coast (South) . . . . .	24.78	+ 1.89	+ 8
{ South Central . . . . .	22.66	- 1.23	- 5
{ South . . . . .	9.45	- 2.87	-23

6th.—One of the most noteworthy features of the rainfall of the south-west monsoon of 1892 was that it was generally most excessive where the rainfall of the previous monsoon was most deficient and *vice versa*.

#### IV.—Retreating South-West monsoon period.

—The rainfall of this period was very abnormal in its character and distribution.

The monsoon current retreated earlier than usual from Bengal in the second week of October, and the rainfall in that month was in general defect in North-Eastern India and more especially in the northern districts of Bengal and Bihar. The current was during the latter half of the month mainly directed to the North and Central Madras Coast districts and the Deccan, and the whole of that area received heavy to excessive rain.

November was an abnormally dry month in Madras. A storm which followed an unusual course gave a much

needed burst of rain to the greater part of Bengal on the 1st, 2nd, and 3rd. Local showers were received during the first and last weeks of the month in the central and southern districts of Madras. Out of 22 districts 10 districts received less than a tenth of their normal fall, and the month was one of the driest Novembers on record in that Presidency.

A diffused storm in the first week of December gave light to moderate rain, chiefly in the coast districts south of Madras. The monsoon current withdrew from the Bay at the end of the first week of the month. Some local thundershowers were received in the southern districts during the last fortnight of the month. The drought was hence nearly as severe as in the preceding month. The chief features of the rainfall of the period were hence as follows:—

- (1) Very deficient rainfall in Madras due to the almost complete failure of the retreating south-west monsoon rains in the months of

November and December. The following gives data:—

PROVINCE.	Average actual rainfall of period.	Variation from normal.	Percentage variation.	
	Inches.	Inches.		
Madras	East Coast (North) . . . . .	0.55	-3.98	-88
	(Central) . . . . .	0.80	-2.04	-72
	East Coast (Central) . . . . .	1.37	-9.71	-88
	East Coast (South) . . . . .	3.05	-11.17	-79
	(South) . . . . .	2.03	-7.92	-79
Mysore	(South Central) . . . . .	1.70	-4.10	-70
	. . . . .	0.55	-2.71	-83

- (2) Deficient rainfall over the remainder of the country except in Bengal where the rainfall was in slight excess due to the fall in the first week of November and in Upper India where the cold weather rains began somewhat earlier than usual. The variations in these districts were in no case large in amount.

### Concluding Summary.

The meteorology of the year 1892 resembles that of the previous year in the largeness and persistence of the more abnormal features. It is especially interesting from the fact that the large abnormal features of the two years were opposite in character. The following, giving a summary of the chief features of each year, shows the contrast between the meteorology of the two years:—

1891.

1st.—The cold weather was exceptionally stormy and the cold weather rainfall the heaviest on record in many parts of Upper India.

2nd.—The hot weather months were unusually cool and characterised by frequent rain in the plains and snow in the more elevated areas in the Himalayas.

3rd.—The rains commenced unusually late and the rainfall of the monsoon period from June to October was more or less deficient

1892.

1st.—The cold weather was exceptionally dry. The snowfall on the hills was one of the lightest on record.

2nd.—The hot weather set in much earlier than usual and was abnormally intense and marked throughout by greater dryness of the air and less rainfall than usual except in Assam.

3rd.—The rains began unusually early and were abundant in every part of India except Burma and Bengal, where there was a slight

over by far the greater part of India, more especially in Rajputana, West Punjab, Sind, and the adjacent districts of Central India.

4th.—During the retreating south-west monsoon the central and northern districts of Madras (more especially Nellore, Cuddapah, Bellary, Kurnool, Godavary and Kistna) received little rain and suffered severely from drought, whilst the southern districts received moderate to heavy rain. The south-west monsoon retreated earlier than usual from the Bay.

to moderate deficiency. The rainfall was especially heavy, and one of the largest on record in the West Punjab and West Rajputana.

4th.—During the retreating south-west monsoon of 1892, the central and northern districts received moderate to heavy rain, whilst the southern districts from Chingleput southwards suffered from drought. The drought was most pronounced in the most southerly districts, including Madura, Tinnevely, Trichinopoly, and Coimbatore. The south-west monsoon retreated earlier than usual in the beginning of December and was very feeble in November.

The abnormal meteorological features of the two years hence stand in marked contrast to each other.

The following table gives mean variation data of the more important elements of meteorological observation of the cold weather of 1891-92 :—

METEOROLOGICAL PROVINCE.	JANUARY AND FEBRUARY 1892.						
	Variation from normal of mean monthly pressure.	Variation from normal of mean maximum temperature.	Variation from normal of mean minimum temperature.	Variation from normal of mean aqueous vapour pressure.	Variation from normal of mean humidity.	Variation from normal of mean cloud.	Variation from normal of average actual rainfall.
Burma Coast and Bay Islands . . . . .	"	o	o	"	%		Inch
Assam . . . . .	-028	+04	-06	-028	-3	-05	+004
Bengal and Orissa . . . . .	-045	+18	+19	+030	-1	+07	+049
Gangetic Plain and Chota Nagpur . . . . .	-030	+26	+17	-007	-6	o	-048
Upper Sub-Himalayas . . . . .	-030	+23	+19	+019	-2	-04	-003
Indus Valley and North-West Rajputana . . . . .	-020	+23	+16	-006	-3	-01	-067
East Rajputana, Central India, and Guzerat . . . . .	-033	+31	+26	+007	-4	+05	-027
Deccan . . . . .	-027	+24	+34	+051	+4	o	+023
West Coast . . . . .	-018	+16	+21	+004	-1	-04	+004
South India . . . . .	-033	+17	+06	-002	-3	-06	-014
	-020	+07	+08	+013	-1	+15	-021

The following gives corresponding data for December 1891, in order to show that the conditions in January and February 1892 were the direct continuation of similar features established in November and December 1891 :—

METEOROLOGICAL PROVINCE.	DECEMBER 1891.						
	Variation from normal of mean monthly pressure.	Variation from normal of mean maximum temperature.	Variation from normal of mean minimum temperature.	Variation from normal of mean aqueous vapour pressure.	Variation from normal of mean humidity.	Variation from normal of mean cloud.	Variation from normal of average actual rainfall.
Burma Coast and Bay Islands . . . . .	"	o	o	"	%		Inch
Assam . . . . .	+036	-07	+06	-008	o	+12	+103
Bengal and Orissa . . . . .	+036	+22	-07	-002	-4	-06	-055
Gangetic Plain and Chota Nagpur . . . . .	+042	+21	+10	-009	-7	+05	-031
Upper Sub-Himalayas . . . . .	+050	+13	o	+007	-2	-06	-023
Indus Valley and North-West Rajputana . . . . .	+047	+04	+01	-005	o	-02	-043
East Rajputana, Central India, and Guzerat . . . . .	+040	+21	+09	-019	-6	+08	-009
Deccan . . . . .	+047	+16	-05	-015	-3	+01	-021
West Coast . . . . .	+050	+13	-06	-039	-4	-09	-056
South India . . . . .	+022	+28	+03	-027	-7	-07	-009
	+027	+22	+20	+027	-1	+08	+066

The preceding tables show that the chief features of the cold weather period of 1891-92 were—

- (1) Increased temperature.
- (2) Decreased humidity and aqueous vapour pressure.
- (3) Decreased cloud.
- (4) Decreased rainfall.

Pressure which was in excess in December fell largely below the normal in February.

The following table shows that in the cold weather of 1890-91 the chief features were the reverse of the preceding :—

METEOROLOGICAL PROVINCE.	JANUARY AND FEBRUARY 1891.						
	Variation from normal of mean monthly pressure.	Variation from normal of mean maximum temperature.	Variation from normal of mean minimum temperature.	Variation from normal of mean aqueous vapour pressure.	Variation from normal of mean humidity.	Variation from normal of mean cloud.	Variation from normal of average actual rainfall.
Burma Coast and Bay Islands . . . . .	"	o	o	"	%		Inch.
Assam . . . . .	-008	+13	+05	-017	-3	o	+007
Bengal and Orissa . . . . .	o	+11	-04	-001	-1	-05	-021
Gangetic Plain and Chota Nagpur . . . . .	+010	-04	+03	-020	-3	-02	+027
Upper Sub-Himalayas . . . . .	+016	-15	-04	+004	+2	-05	+027
Indus Valley and North-West Rajputana . . . . .	+023	-43	-04	+007	+7	+10	+081
East Rajputana, Central India, and Guzerat . . . . .	+027	-47	+06	+022	+8	+09	+039
Deccan . . . . .	+023	-10	-08	-011	-1	-04	+003
West Coast . . . . .	+020	-08	-10	-013	-1	-05	+007
South India . . . . .	+009	+10	-04	-032	o	-10	-004
	+006	+05	+08	+048	+6	+06	+008

The chief features of the cold weather of 1891-92 were hence, diminished pressure (the deficiency being small in amount in January and large in February), increased temperature both by day and night, normal or slightly increased aqueous vapour pressure and decreased humidity (due to the temperature conditions), slightly less cloud than usual (except in Southern India) and decreased rainfall.

In the preceding November and December pressure was above the normal, the excess in the latter month being greatest in North-Western and least in Southern India. The temperature variations were small, but the air was generally slightly warmer and drier than usual. Rainfall was everywhere in defect except in a portion of Southern India.

The decreased rainfall in Northern India during December 1891 was an indication of a drier and less disturbed cold weather than usual.

The variations of temperature aqueous vapour, humidity and cloud amount in the months of November and December 1891 are too small in amount to explain and account for the very deficient rainfall in the months of January and February. It may first be noted that the increased temperature in January and February (as also the diminished humidity) were due solely to the absence of rainfall in the plains and snowfall in the hills. That this was the case is shown by the facts that the elevation of temperature was as largely shown in the night as in the day, and that it was nearly uniform in amount over the whole of Northern and Central India. The excess was greatest in amount in Upper India which is usually affected to a larger extent by these storms than the remainder of India.

There appears to be only one feature which throws light on the causes of the great variations in the number and character of the cold weather storms in different years which give rise to these large differences in the cold weather rainfall and temperature conditions from year to year, *viz.*, the relation between the pressure variations at the hill stations and neighbouring plain stations as indicating an abnormal excess or defect in the middle or higher atmospheric strata. These variation differences between hills and plains may be termed vertical pressure anomalies.

The following table gives vertical pressure anomalies for the cold weather periods of 1891-92 and 1890-91:—

## 1891-92.

HILL AND PLAIN STATIONS.	VERTICAL PRESSURE ANOMALY.						Mean of period November 1891 to February 1892.
	September 1891.	October 1891.	November 1891.	December 1891.	January 1892.	February 1892.	
Leh and Lahore .	+ '023	- '009	+ '113	+ '060	+ '066	+ '086	+ '081
Murree and Rawalpindi	+ '043	+ '011	+ '056	+ '030	+ '017	+ '045	+ '037
Quetta and Jacobabad	+ '042	+ '029	+ '054	+ '029	+ '046	+ '093	+ '056
Simla and Ludhiana .	+ '010	- '018?	+ '037	+ '015	+ '017	+ '042	+ '028
Ranikhet and Bareilly	+ '007	- '020	+ '020	+ '013	+ '034	+ '053	+ '030
Darjeeling and Dhubri	+ '048	- '002	+ '007	+ '014	+ '029	+ '053	+ '026
Mount Abu and Deesa	+ '013	+ '007	+ '022	+ '017	+ '043	+ '025	+ '027
Pachmarhi and Hoshangabad .	- '003	- '003	0	- '002	+ '039	+ '037	+ '019
Wellington and Coimbatore .	+ '033	+ '032	+ '037	+ '042	+ '033	+ '054	+ '042

## 1890-91.

HILL AND PLAIN STATIONS.	VERTICAL PRESSURE ANOMALY.						Mean of period November 1890 to February 1891.
	September 1890.	October 1890.	November 1890.	December 1890.	January 1891.	February 1891.	
Leh and Lahore .	- '018	- '014	- '002	- '038	+ '012	- '070	- '025
Quetta and Jacobabad .	+ '025	+ '012	- '035	- '066	- '019	- '032	- '038
Murree and Rawalpindi	+ '010	- '015	- '008	- '009	- '024	- '063	- '026
Simla and Ludhiana .	+ '009	+ '006	+ '004	+ '003	- '030	- '053	- '019
Ranikhet and Bareilly.	+ '052?	- '007	- '007	+ '027	+ '034?	- '017	+ '009
Darjeeling and Dhubri	- '017	+ '007	- '031	- '016	+ '030	0	- '004
Mount Abu and Deesa	+ '009	+ '010	+ '020	+ '020	+ '018	+ '004	+ '016
Pachmarhi and Hoshangabad.	- '004	0	+ '026	+ '038	+ '023	+ '017	+ '017
Wellington and Coimbatore.	- '030	+ '026	+ '034	+ '026	+ '030	+ '033	+ '031

The first of the preceding two tables shows that the cold weather of 1891-92 was characterised by a large excess of pressure at the level of the hill stations. The data also indicate that there was a marked tendency in the months of September and October to the establishment of this condition. It was fully shown in November and was the most prominent feature of the distribution of pressure in December and the succeeding two months.

The tables hence establish that the exceptionally dry cold weather of 1891-92 was preceded by and accompanied a large excess of pressure in the middle and probably the higher atmosphere over Northern India and that in the preceding cold weather of 1890-91, which was characterised by much heavier precipitation than usual, there was an almost equally large and persistent deficiency of pressure. The data show also that these conditions were established before the commencement of the cold weathers in question and were very persistent. It is hence very probable that their explanation will probably also suggest the causes which determine the occurrence of the cold weather storms and of the distribution of the rainfall of the season.

The chief causes of these large and persistent vertical anomalies appear to me to be due to—

*1st.*—The movement in the upper strata impressed by the greater or less ascensional action over India during the rains due to increased or diminished rainfall.

*2nd.*—The readjustment of pressure which occurs at the end of rains and accompanies the rapid reduction of temperature in Central Asia and Upper India that commences in September.

There is no doubt that unusually heavy monsoon rains in India necessarily increase the upper circulation which tends to continue for some time after the rains are over. The cessation of heavy rain is, as a rule, accompanied or followed by increase of pressure, and the general tendency of the meteorological changes at the end of the rainy monsoon is to give a large increase of pressure.

The consequences of a stronger monsoon than usual would, hence, appear to be that the heavy rainfall would give rise to increased air motion and decreased pressure during the rains which would be almost equally exhibited in the middle and lower strata, but afterwards in virtue of the smaller resistance in the higher strata to the continuation of the increased motion, it could generally be continued there to a greater extent than below. Hence heavier rains would accompany and be followed by decreased pressure to a moderate extent below and decreased pressure to a largish extent above. These conditions would give rise to negative vertical anomalies which would be continued for some time afterwards by the increased movement of the upper air currents in November and December and the succeeding cold weather.

The argument underlying the above further suggests that—

1st.—There is a strong tendency for heavy monsoon rains to be followed by heavier cold weather precipitation than usual and for a light south-west monsoon to precede deficient rainfall in the succeeding cold weather. Feeble and light monsoon rains in at least two cases out of three are followed by lighter winter rains than usual. It is this combination of deficient rainfall in the south-west monsoon period and the following cold weather in an acute form which occasionally gives rise to prolonged drought and scarcity in North-Western India.

2nd.—On the other hand, in virtue of actions set up during the cold weather and succeeding hot weather the tendency is for heavy precipitation in the cold weather to be followed by a light monsoon and *vice versa*.

An examination of many years' returns appears to indicate that the above relations are generally, although not universally, true. It is sufficient to indicate the experience of the past three years. The heavy monsoon rains of 1890 were followed by abundant cold weather rains in 1890-91. Similarly, the heavy monsoon rains of 1892 were followed by very heavy precipitation over Northern India. The abundant cold weather rains of 1890-91 were followed by deficient monsoon rains in 1891, and the deficient rainfall of the cold weather of 1891-92 preceded unusually abundant and favourable rains during the south-west monsoon period of 1892.

The cold weather of 1891-92 was noteworthy for the large positive vertical anomalies, the largest and most persistent for many years. They followed lighter monsoon rains in accordance with the previous argument. The cold weather rains were very light, and the winter was one of the driest on record in the hill districts, where the prolonged drought caused the loss of the early crops in 1892 in the Almora and Simla hill districts.

**The hot weather period, March to May 1892.**

—The meteorological conditions of the hot weather were determined by the unusually small snowfall in the Himalayan and Afghan mountain areas (and perhaps in Central Asia generally) and by the absence of large cold weather cyclonic storms. Hot weather conditions were hence developed earlier in the year than usual. Temperature was throughout the whole period more or less largely in excess, pressure considerably in defect (the deficiency being greatest in North-Western India and diminishing in amount southward), and the humidity very considerably below the normal. These abnormal conditions were on the whole most strongly exhibited in the month of March. The hot weather air circulation was more vigorous than usual. The increase in the force of the winds was most strongly shown the local sea winds blowing across

the Bengal Coast in the Bay of Bengal and across the Sind and Kathiawar coasts in the Arabian sea. The increasing influence of these sea winds in April and May tended to diminish the large excess of temperature established in March, and hence the temperature variations of April and May were smaller than those of March, more especially in the districts directly affected by the sea winds. The following table gives the mean variations of the more important elements of observation in ten meteorological provinces in India for the hot weather period March to May 1892:—

PROVINCE.	HOT WEATHER, 1892.					
	Variation of pressure from normal.	Variation of maximum temperature.	Variation of minimum temperature.	Variation of aqueous vapour pressure.	Variation of humidity.	Variation of cloud, and of period from normal.
Burma Coast and Bay Islands . . . . .	"	o	o	"	o	Inches.
Assam . . . . .	-.041	-0.9	-0.7	-.031	o	+ 7.30
Bengal and Orissa . . . . .	-.044	-0.4	+0.5	+0.19	+ 1	+11.63
Gangetic Plain and Chota Nagpur . . . . .	-.050	+1.3	+1.1	+0.02	- 4	+ 0.18
Upper Sub-Himalayas . . . . .	-.064	+2.2	+1.9	+0.01	- 2	- 1.57
Indus Valley and North-West Rajputana . . . . .	-.075	+5.0	+3.2	-.050	-10	- 1.74
East Rajputana, Central India, and Guzerat . . . . .	-.071	+6.3	+3.7	-.032	- 9	- 0.72
Deccan . . . . .	-.036	+2.9	+2.6	+0.29	- 1	- 0.20
West Coast . . . . .	-.030	+1.9	+1.5	-.022	- 4	- 0.31
South India . . . . .	-.034	+0.3	+0.5	+0.13	- 2	+ 7.40
	-.040	+1.4	+1.0	+0.01	- 1	- 1.32

The following table gives similar data for the hot weather of 1891 for comparison:—

PROVINCE.	HOT WEATHER OF 1891.					
	Variation of pressure from normal.	Variation of maximum temperature from normal.	Variation of minimum temperature from normal.	Variation of aqueous vapour pressure from normal.	Variation of humidity.	Variation of cloud, and of rainfall of period from normal.
Burma Coast and Bay Islands . . . . .	"	o	o	"		Inches.
Assam . . . . .	+0.006	+1.9	+1.2	-.021	- 3	-5.58
Bengal and Orissa . . . . .	+0.001	-1.3	-0.9	-.018	+ 1	+0.7
Gangetic Plain and Chota Nagpur . . . . .	+0.019	-1.9	-0.6	-.015	- 1	+1.0
Upper Sub-Himalayas . . . . .	+0.022	-3.2	-1.5	-.021	+ 2	+0.9
Indus Valley and North-West Rajputana . . . . .	+0.037	-4.7	-2.6	-.011	+ 4	+0.7
East Rajputana, Central India and Guzerat . . . . .	+0.042	-3.3	-1.6	-.018	+ 1	+1.1
Deccan . . . . .	+0.026	-2.5	-0.8	+0.12	+ 3	+1.0
West Coast . . . . .	+0.018	-1.1	-0.2	+0.25	+ 3	+0.5
South India . . . . .	+0.002	o	-0.3	-.026	- 2	-0.8
	+0.003	-0.1	+0.6	+0.18	+ 2	-0.58

A comparison of the variation data of the two preceding tables will show that the variations were in almost all

cases opposite in character in the two periods. One of the more remarkable features of the hot weather of 1892 was the excessive rainfall in Assam and North and East Bengal. This is an almost invariable feature of hot weather seasons when the hot weather conditions are much more strongly marked than usual. The following table gives a complete statement of the variations of rainfall from the normal in the ten meteorological divisions of Bengal and Assam during the hot weather of 1892 with a statement of the variations in the corresponding period of 1891 (a period of opposite meteorological abnormal conditions) for comparison :—

METEOROLOGICAL DIVISION.	VARIATION FROM NORMAL OF AVERAGE ACTUAL RAINFALL.				VARIATION FROM NORMAL OF AVERAGE ACTUAL RAINFALL IN			
	March 1892.	April 1892.	May 1892.	Period, March to May 1892.	March 1891.	April 1891.	May 1891.	Period, March to May 1891.
	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Assam (Surma).	+2.61	+17.55	+2.83	+22.99	-6.65	-6.99	+3.65	-9.99
Assam (Brahmaputra).	+0.69	+4.20	+6.00	+10.89	-1.41	-2.29	-0.08	-3.78
Bengal (East)	-1.67	+2.64	+1.65	+2.62	-0.47	+0.49	+2.45	+2.47
(North)	-0.18	+2.76	+9.09	+11.67	+0.64	-2.49	+2.04	+0.19
(Deltaic)	-1.76	-0.40	-0.91	-3.07	+2.16	-1.56	+2.28	+2.88
(Central).	-0.56	+0.90	-0.81	-0.47	+3.35	-1.10	+4.50	+6.75
Orissa . . .	-1.05	-0.97	-2.26	-4.28	+3.11	-1.24	+0.81	+2.68
Bihar (South)	-0.32	-0.10	-1.65	-2.07	+2.50	-0.38	+1.58	+3.70
(North)	-0.20	+0.11	-0.58	-0.67	+1.81	-0.91	+2.58	+3.48
Chota Nagpur	-0.82	-0.22	-1.40	-2.44	+4.28	-0.57	+2.30	+6.01

A comparison of these two tables will show that in eight out of ten divisions the variations in the rainfall of the two periods were opposite in character. The rule hence appears to be that in years of strongly marked hot weather conditions the hot weather rainfall in Assam and East Bengal is usually excessive, and in years when the hot weather conditions are feeble, the rainfall of the period in Assam and East Bengal is below the normal. In seasons of strongly marked hot weather conditions the local southerly sea winds blowing across the Bengal Coast and the westerly winds blowing down the Gangetic Plain are much stronger than usual. The following gives data for six stations representative of these currents in the hot weather of 1892 :—

AREA.	STATION.	WIND VELOCITY, MARCH TO MAY.		Percentage variation.
		Actual, 1892.	Normal.	
		Miles.	Miles.	
BENGAL COAST DISTRICTS.	False Point . . .	388	307	+26
	Saugor Island . . .	465	354	+31
	Dacca . . . . .	203	142	+43
GANGETIC PLAIN	Hazaribagh . . .	258	196	+32
	Patna . . . . .	156	102	+53
	Allahabad . . .	123	84	+43

The southerly winds in the Bengal Coast districts were

hence 33 per cent. stronger than usual and were almost certainly strongest between Saugor Island and Burrisal. The air motion down the Gangetic Plain was upwards of 40 per cent. more rapid than usual. The effect of this increased air motion was to give a much greater set of humid winds to Bengal and to restrict these winds to a smaller area than usual in South, East and North Bengal and Assam. The forced ascensional movement given to these humid winds by the hills in these areas gave rise to more frequent thunderstorms and to far heavier rainfall than usual in North and East Bengal and Assam, and to less than usual in the remainder of Bengal. The data in the preceding rainfall table also show that the distribution of rainfall in Bengal and Assam in 1891, when the general hot weather conditions were the opposite of those in 1892, was also opposite in character.

The data for the past two years are very interesting from a theoretical point of view. The heavy rainfall in Assam in the hot weather period has been ascribed chiefly to local evaporation. The data for the years 1891 and 1892 show conclusively that local evaporation plays a subordinate part, and that the rainfall is mainly due to the strong shallow local sea winds of the season which obtain in that area and to the geographical conditions of that area of heavy rainfall in the hot weather.

**The South-west monsoon period, June to October 1892.**—The preceding hot weather conditions were such as are usually followed by earlier and more abundant rains than usual in the south-west monsoon period.

The first large advance of the monsoon current occurred during the last week of May and the first week of June in the Arabian sea. As almost invariably occurs at the commencement of the monsoon in the Arabian sea, a cyclonic storm formed in front of the advancing current off the Konkan coast. It advanced by a curved path westwards toward the Arabian sea. It was however of feeble intensity, and probably broke up on the 6th June before reaching the Arabian coast. The monsoon current advanced unusually rapidly across Central India to the East Punjab. The following gives the dates of the first general rainfall :—

South East Punjab . . . . .	7th June.
North-Western Provinces . . . . .	6th June.
Rajputana . . . . .	7th June.
Central India . . . . .	6th June.
Central Provinces . . . . .	4th June.
Berar . . . . .	4th June.

The humid currents fall off rapidly in strength and withdrew from Northern and Central India on the 17th and 18th, and light variable or dry westerly winds obtained for upwards of the next fortnight in the Gangetic Plain, Rajputana, Central India, the Central Provinces and Berar.

The marine data show that during this interval, a shallow depression lay over the Arabian sea between Socotra and the Bombay Coast districts. Its position and intensity varied slightly from day to day, but it was a persist

ent feature throughout this period and determined light but steady south-east winds to the Bombay Coast stations during the last fortnight of the month. Weather in this shallow depression area in the Arabian sea was fine with light to moderate winds and moderate cloud. Squalls were of occasional occurrence in the south and south-east of the Arabian sea, but not in the northern half, except to the south of Socotra. The causes of the temporary withdrawal of the monsoon winds from India and of the formation of the shallow low pressure area in the centre of the Arabian sea during this period can only be conjectured.

It is evident that the pressure, temperature and other conditions at the end of May were favourable to a strong influx of south-west monsoon winds into Upper India and also for their continuance. The influx was notwithstanding feeble and the conditions determining its strength were hence almost certainly present in the sea area and probably in the equatorial belt. The formation of the shallow depression in the centre of the Arabian sea was apparently a result of the feebleness of this advance.

The recovery of pressure after the filling up of cyclonic storms or cyclones appears to be far more marked in deep than in shallow depressions. There is hence a tendency for feeble cyclonic storms to fill up partially and not completely, and the areas in which such storms fill up are frequently covered for some time afterwards by residual depression. On the other hand, the filling up of a severe cyclonic storm or cyclone is usually followed by an excessive rebound of pressure, and the area in which it breaks up is usually characterised for some time afterwards by excessive pressure which exercises an important influence in determining the tracks of subsequent storms for some time afterwards. In the present case the feeble cyclonic storm in the Arabian sea almost certainly left a slight residual depression in that area which came into prominence when the humid currents retreated southwards,

The Bay current advanced in the first week of June to the head of the Bay. At the same time a cyclonic storm formed in front of it. This storm was of considerable intensity, and winds of force 9 and 10 were experienced near the centre. It crossed the Orissa Coast on the evening of the 5th, and drifted north-westwards into the North-Western Provinces. The south-west monsoon humid currents were hence established for a brief period in the Gangetic plain but withdrew on the 17th, and dry westerly winds continued until the 28th, when winds shifted to east and began to give showery weather and light to moderate rain. The current was not strong for some days, and it was not until the 11th and 12th of July that it set in with strength.

The permanent advance of the Bay current occurred in the last week of June and of the Bombay current in the first week of July. The following gives the dates of the first

general rainfall in different parts of Northern and Central India due to this advance of this Bombay current:—

Berar . . . . .	7th July.
Central Provinces . . . . .	8th July.
Central India . . . . .	9th July.
Rajputana . . . . .	10th July.
Punjab . . . . .	10th July.

Hence the first large temporary advance of monsoon winds and the permanent advance occurred almost simultaneously in each of the two sea areas and were apparently due to common actions determining the air movement in the whole Indian monsoon area.

Both currents obtained with unusual steadiness and strength in the months of July, August and September. Cyclonic storms and depressions occasionally formed in the north of the Bay. They were however of less frequent occurrence than usual in July and August. The following gives data:—

MONTH.	CYCLONIC STORMS.	
	Actual number, 1892.	Normal number.
June . . . . .	2	1
July . . . . .	1	2
August . . . . .	0	2
September . . . . .	3	2
October . . . . .	3	1
Total . . . . .	9	8

The number of storms during the months of July and August was much below the average, and hence in accordance with the rule that these storms are most frequent when the monsoon currents are light and unsteady and least frequent when they are abnormally strong and steady.

The chief features in the distribution of the south-west monsoon rainfall were:—

(1) Very large excess in the West Punjab and Rajputana.

METEOROLOGICAL DISTRICT.	RAINFALL.			
	Total actual, June to October 1892.	Total normal, June to October.	Variation from normal.	Percentage variation.
	Inches.	Inches.	Inches.	
West Punjab . . . . .	14'47	6'08	+ 8'39	+ 138
Sind . . . . .	10'95	4'97	+ 5'98	+ 120
West Rajputana . . . . .	20'69	10'81	+ 9'88	+ 91

(2) Large excess in the East Punjab, North-Western Provinces and East Rajputana.

METEOROLOGICAL DIVISION.	RAINFALL.			
	Total actual, June to October 1892.	Total normal, June to October.	Variation from normal.	Percentage variation.
	Inches.	Inches.	Inches.	
East Punjab . . . . .	24'55	17'96	+ 6'70	+ 37
North-Western Provinces . . . . .	34'63	32'68	+ 1'95	+ 6
East Rajputana . . . . .	32'42	26'68	+ 5'74	+ 22

## (3) Large excess in Hyderabad, Berar, the western districts of the Central Provinces and some portions of Khandesh.

METEOROLOGICAL DIVISION.	RAINFALL.			
	Total actual, June to October 1892.	Total normal June to October.	Variation.	Percentage variation.
	Inches.	Inches.	Inches.	
Hyderabad, South . . .	42.61	25.41	+17.20	+68
Berar . . . . .	52.09	34.77	+17.32	+50
Central Provinces, West . .	54.77	41.32	+13.45	+33

## (4) Large excess in Konkan, the Bombay and Madras, Deccan and Southern India generally (except South Madras).

METEOROLOGICAL DIVISION.	RAINFALL.			
	Total actual, June to October 1892.	Total normal, June to October.	Variation from normal.	Percentage variation.
	Inches.	Inches.	Inches.	
Konkan . . . . .	134.26	119.56	+14.70	+12
Bombay Deccan . . . . .	42.87	29.21	+13.66	+47
Madras Central . . . . .	29.43	21.07	+8.36	+40
East Coast, North . . . . .	46.72	31.32	+15.40	+49

## (5) Slight deficiency in Burma.

## (6) Largish deficiency in the south and west districts of Bengal and the eastern districts of Chota Nagpur. The following gives data for these areas :—

METEOROLOGICAL DIVISION.	RAINFALL.			
	Total actual, June to October 1892.	Total normal, June to October.	Variation from normal.	Percentage variation.
	Inches.	Inches.	Inches.	
East Bengal . . . . .	59.44	70.62	-11.18	-16
Deltaic " . . . . .	39.09	48.98	-9.89	-20
Central " . . . . .	38.02	48.30	-10.28	-21

## (7) Moderate excess in North Bengal and Assam.

METEOROLOGICAL DIVISION.	RAINFALL.			
	Total actual, June to October 1892.	Total normal, June to October.	Variation from normal.	Percentage variation.
	Inches.	Inches.	Inches.	
North Bengal . . . . .	94.95	81.01	+13.94	+17
Assam Surma . . . . .	103.65	83.55	+20.10	+24

The relations between the rainfall distribution of the south-west monsoon of 1892 and the antecedent meteorological conditions established during the hot weather were even more clearly marked than usual. The hot weather of 1892 was of unusual intensity. The formation of the low pressure area in Northern India, which is an essential condition antecedent to the advance of the monsoon, occurred earlier than usual. Pressure was also considerably below the normal in North-Western India, or there was an abnormal depression due to the special conditions of the period. There were no other strongly marked conditions.

Hence the conditions were unusually favourable to the extension of the south-west monsoon winds over the whole of India, and the temporary advance in June and the permanent advance in July from the coast districts to Upper India were effected with unusual rapidity.

The conditions were also favourable for strong currents and for their extension to the limits of the monsoon region in Upper India. An important result of the abnormal strength of the two currents was the unusually heavy rain in the Punjab. It is only when both currents are strong that the Punjab receives frequent and heavy rain during the monsoon period.

The Bengal current was throughout stronger relatively to the normal than the Bombay current. An important effect of this relation was to displace the trough of low pressure further to the south than usual. Instead of the medial line running from Cuttack to Mooltan it ran through Vizagapatam, Raipur, Sutna and Mooltan. This was associated with the following abnormal features of the rainfall :—

- (1) The Bengal current was determined more largely to the Gangetic Plain and Upper India than usual, and hence to a less extent to Burma and the greater portion of East and Central Bengal. Hence the rainfall in the latter areas was more or less below the normal, the deficiency being most marked in the month of August when this feature was most strongly exhibited. On the other hand, the rainfall was in excess in the Punjab and Gangetic Plain, the excess being greatest in the Punjab.
- (2) That portion of the Bombay current crossing the West Ghâts was deflected more to the south than usual, and the whole of the Deccan and the greater part of Mysore and Madras received more abundant and favourable rain than usual.
- (3) The same conditions which determined the Bengal current more strongly to Upper India influenced the northern half of the Bombay current, which, hence, gave unusually frequent rain to Rajputana.

The rainfall in Rajputana, as in the West Punjab and Sind, was in part due to the advance of cyclonic storms from the head of the Bay to Upper India. These storms advanced further into Upper India than usual in consequence of the peculiar features of the period. There is a very marked tendency in India for storms in the south-west monsoon period to advance along the trough of low pressure to any area of abnormally deficient pressure in or near it at the time. Several cyclonic storms, more especially those of the 22nd to 29th July and the 7th to the 12th September, hence advanced into Upper Sind and broke up on the north-west frontier. These cyclonic storms in their advance drew strong moisture currents to Upper India and the Punjab. Sind and Rajputana hence continued to receive frequent and heavy rain for some days after the disintegration of each of these storms.

The chief features of the monsoon rainfall of 1892 were hence very marked. The large variations were directly related to the antecedent conditions of the preceding hot and cold weather periods. The absence of cold weather storms and the small snow precipitation in the cold weather of 1891-92 was followed by an earlier and more severe hot weather than usual. This introduced the conditions necessary for the establishment of the south-west monsoon circulation earlier and in a stronger form than usual. An important determining condition was the abnormal deficiency of pressure in Northern India, and more especially in Upper India. Both currents were hence stronger than usual, and directed more largely than usual to Upper India. Little is known as yet with respect to the conditions that determine the relative strength of the two currents. In the year under discussion the Bengal current was the stronger and steadier. This relation affected the position of the south-west monsoon low pressure trough in the manner indicated by theory and past experience. The eastern portion was displaced further south and west than usual to the central and southern districts of the Central Provinces. The Bombay current gave heavier rain than usual to the Deccan and Berar and the western districts of the Central Provinces, *i.e.*, in the area of its southern extension, and also to Sind, Rajputana and Central India or the area of its northern extension. The Bengal current gave unusually heavy rain to Upper India, normal or slightly heavier rain to the Gangetic Plain and eastern districts of the Central Provinces, and less rain than usual to Bengal and Burma. The districts in Bengal which were most largely affected by the increased flow of the Bengal currents to North-Western India and by the abnormal position of the trough of low pressure were the districts in West Bengal immediately to the north of the eastern extremity of the trough in its normal position, *viz.*, Midnapore, Burdwan, Hooghly, Howrah, Bankura.

The diminished rainfall in that area was chiefly due to

the lightness of the showers, as is shown by the data of the following table\* :—

DISTRICT.	JUNE TO OCTOBER 1892.						
	NUMBER OF RAINY DAYS.			RAINFALL.			
	Average actual.	Average normal.	Percentage variation from normal.	Average actual.	Average normal.	Variation from normal.	Percentage variation.
Midnapore	53.1	58.3	-9	31.07	50.82	-19.75	-39
Burdwan	51.0	57.9	-12	37.30	44.00	-6.70	-15
Hooghly	49.3	63.4	-22	32.47	47.58	-15.11	-32
Howrah	51.0	66.8	-24	30.12	47.76	-17.64	-37
Bankura	49.5	64.4	-23	30.44	48.99	-18.55	-26

The following table gives the mean variations of the chief elements of observation from the normal of the eleven meteorological provinces of India for the south-west monsoon period :—

METEOROLOGICAL PROVINCES.	MEAN VARIATION FROM NORMAL DURING SOUTH-WEST MONSOON PERIOD JUNE TO OCTOBER 1892, OF							Total rainfall.
	Mean pressure.	Mean maximum temperature.	Mean minimum temperature.	Mean temperature.	Mean aqueous vapour pressure.	Mean humidity.	Mean cloud amount.	
Burma Coast and Bay Islands	-0.06	+0.1	-0.2	-0.1	-0.15	-1	+0.6	-15.77
Burma Inland	+0.02	-0.1	-0.5	-0.3	?	?	?	-3.18
Assam	+0.01	-0.7	0	-0.3	+0.03	0	+0.1	+12.80
Bengal and Orissa	+0.05	-0.1	0	-0.1	-0.20	-2	+0.6	-9.05
Gangetic Plain and Chota Nagpur	-0.08	-0.5	-0.3	-0.4	-0.04	+1	+0.4	+1.43
Upper Sub-Himalayas	-0.09	-1.8	-0.5	-1.1	+0.14	+5	+0.8	+2.18
Indus Valley and North-Western Rajputana	-0.10	-0.4	+0.1	-0.2	+0.01	0	+1.0	+6.64
East Rajputana, Central India and Guzerat	-0.15	-0.4	+0.5	0	+0.29	+4	+0.7	+5.42
Deccan	-0.13	-0.5	+0.5	0	+0.30	+3	+1.0	+10.68
West Coast	-0.29	-0.7	0	-0.4	+0.03	+1	+0.7	+20.14
South India	-0.20	-1.0	-0.2	-0.6	+0.00	+2	+0.6	+7.91

**The Retreating south-west monsoon period (November and December 1892).**—The meteorological conditions of this period were very abnormal. North and Central Madras received heavy rain due to a series of cyclonic storms during the month of October. The third of these storms advanced by a very unusual track, and gave a short period of rain to the greater part of Bengal on the 1st, 2nd and 3rd of November.

During nearly the whole of November, little or no rain fell in Madras or Mysore, and the month was exceptionally

\* The rainfall data in this table differ slightly from those given in the first table, page 528, due to the inclusion of rainfall for some stations not available when the first table was prepared.

dry. A diffused disturbance gave slight to moderate rain in the Coromandel coast districts on the 1st, 2nd and 3rd December. Unusually strong north-east monsoon winds set in over Lower Burma, the Gulf of Siam, Tenasserim and the Andaman sea in the last week of November. Immediately after the storm of the 1st to 3rd December broke up, north-east winds extended rapidly over the south of the Bay, and north-east monsoon winds were fully established over the whole of the Bay area on the 5th, and continued steadily during the remainder of the month.

The following table gives the variation data of ten meteorological provinces for this period :—

METEOROLOGICAL PROVINCE.	VARIATION FROM NORMAL DURING THE PERIOD NOVEMBER AND DECEMBER 1892, OF					
	Mean pressure.	Mean maximum temperature.	Mean minimum temperature.	Mean aqueous vapour pressure.	Mean humidity.	Mean cloud.
Burma Coast and Bay Islands	+003	-1.3	-1.2	-0.54	-3	+0.2
Assam	+005	-0.6	-0.5	-0.13	-1	-0.5
Bengal and Orissa	+011	-1.2	-2.5	-0.63	-5	-0.6
Gangetic Plain and Chota Nagpur	-008	0	-1.6	-0.33	-5	-0.6
Upper Sub-Himalayas	-006	-1.4	-0.1	-0.24	+1	+0.6
Indus Valley and North-Western Rajputana	-002	-0.8	+0.6	-0.44	-6	+0.9
East Rajputana, Central India and Guzerat	+007	-0.1	-0.3	-0.16	-3	+0.7
Deccan	+018	+0.4	-0.6	-0.19	+1	-0.8
West Coast	+026	-0.2	-1.1	-0.43	-4	-0.8
South India	+029	+1.3	-1.2	-0.35	-6	-1.1

The chief meteorological features of this period were—

*1st.*—Very deficient rainfall in the Madras Presidency and Mysore and more especially in the southern districts of Madras, which usually receive moderate to heavy rainfall during this period.

*2nd.*—The feebleness of the south-west winds in the south of the Bay in November and their abnormally early withdrawal from the Bay in the first week of December, about three weeks earlier than usual.

*3rd.*—Unusual dryness of the air and largely decreased temperature over the greater part of India, and more especially in Burma and North Eastern India.

The meteorological conditions in October were not marked by large variations from the normal. The south-west monsoon current was withdrawn slightly earlier than usual at the end of September from Northern India, and was determined more largely than usual in October to the Deccan and North and Central Madras Coast districts. Hence, the whole of that area received larger amounts of rain than usual, whilst in Northern India and South Madras the rainfall was more or less below the normal. A

large change of conditions occurred in the beginning of November, partly due to actions in India itself and partly to actions outside of India.

The heavy rainfall of October in the Deccan due in great part to a series of cyclonic storms was followed by an abnormal excess of pressure in that area and in Southern India during the month of November. The low pressure area in the Bay, instead of stretching across the south of the Bay from the Andaman to the Coromandel Coast lay over the south-east of the Bay (to the west and north-west of the Nicobars).

The chief results of these abnormal conditions in the Bay, due in part to the abnormal pressure changes in the Deccan, were as follow :—

*1st.*—The entire absence of cyclonic storms in the Bay during November.

*2nd.*—Abnormally deficient rainfall in Madras, more especially the Coromandel Coast districts. Local showers were of occasional occurrence in the east districts, but the total rainfall of the month was barely one-eighth of its normal amount. For complete data see page 434, November Review.

*3rd.*—Weather was more rainy and squally than usual in the south-east of the Bay. The following gives rainfall data for Port Blair and Camorta :—

	RAINFALL.		
	Actual November 1892.	Normal November.	Variation.
Port Blair	Inches. 14.85	Inches. 8.97	Inches. +5.88
Camorta	9.19	13.45	-4.26

The rainfall was also slightly greater than usual in Tenasserim.

An important change commenced in the last week of November, apparently due chiefly to causes outside of India.

North-east winds of unusual strength set in over the Eastern Peninsula and the Andaman sea, and rapidly extended over the Bay.

The south-west winds in the south of the Bay had been very feeble for some time previously. They gave way rapidly in the first week of December, and north-east monsoon winds were established over the whole of the Bay before the end of the week. The first indication of this unusually strong extension of dry land winds was shown in November by the abnormal dryness of the air and deficiency of aqueous vapour over the whole of North Eastern India and Burma. These features were most marked in Assam, East Bengal and Burma in November, and extended to the Andaman Islands as (represented by Port

Blair) in December. These conditions remained as permanent features of the following two or three months. The simplest and most satisfactory explanation of the origin of these conditions hence appears to be that there was a stronger flow of land winds down the river valleys of Burma and Siam, and probably also of Assam, due to causes in operation in Central Asia (China and Thibet).

The temperature, cloud, humidity and other conditions in India of the period were hence largely determined by the strongly marked north-east monsoon conditions in Burma and North Eastern India. The conditions at the end of the year in India were in no way remarkable. There was a slight to moderate deficiency of pressure in Northern India, and a slight deficiency at the hill stations relative to the neighbouring plain stations, but the amounts were small until January, when they increased rapidly.

There were, however, indications of very abnormal conditions to the north of the Indian area. Amongst these were—

- 1st.—Excessive rain and snow in Baluchistan in November and December.
- 2nd.—Early commencement of winter snowfall in the Afghan mountains.
- 3rd.—The remarkable deficiency of aqueous vapour in Burma, Tenasserim, the Andamans, etc., and unusual steadiness in the northerly winds in that area.

How far these conditions affected the distribution of the rainfall and the character of the weather in January February and March 1893, will be dealt with in the Annual Summary for 1893.

**Annual.**—The following table gives a tabular summary of the chief features of the meteorological data of the year 1892 for the eleven meteorological provinces of India:—

PROVINCE.	Pressure variation from normal,	Mean maximum.	Variation from normal,	Mean minimum.	Variation from normal,	Mean daily temperature,	Variation from normal,	Mean daily range.	Absolute range, during year,	Mean monthly absolute range,	Rainfall,	Normal rainfall,	Variation from normal,
	"	"	"	"	"	"	"	"	"	"	Inches.	Inches.	Inches.
Burma Coast and Bay Islands	-.017	87.1	-0.3	72.7	-0.5	80.0	-0.4	14.5	38.2	22.8	129.42	139.74	-10.05
Burma Inland	-.005	89.4	0	67.2	-1.0	78.9	-0.5	23.2	60.7	34.7	52.25	55.34	-3.10
Assam	-.012	83.4	-0.2	67.5	+0.4	75.5	+0.1	15.9	49.9	26.9	128.09	101.58	+26.51
Bengal and Orissa	-.014	87.1	+0.3	69.5	-0.1	78.3	+0.1	17.3	54.2	28.2	62.23	70.60	-8.37
Gangetic Plain and Chota Nagpur.	-.025	88.9	+0.7	67.4	+0.4	78.2	+0.5	21.5	67.5	33.9	44.93	45.66	-0.73
Upper Sub-Himalayas	-.027	87.9	+0.6	63.4	+0.9	75.7	+0.7	24.5	78.8	40.3	39.07	39.70	-0.62
Indus Valley and North-Western Rajputana.	-.028	92.5	+1.8	65.8	+1.5	79.4	+1.6	26.5	79.5	43.4	15.65	9.86	+5.79
East Rajputana, Central India and Guzerat.	-.018	91.2	+0.9	67.8	+1.6	79.5	+1.3	23.8	67.6	38.0	39.19	32.27	+5.67
Deccan	-.013	89.6	+0.6	67.6	+0.9	78.3	+0.7	22.2	62.1	34.1	48.34	38.23	+9.21
West Coast	-.022	86.0	+0.1	74.0	0	80.1	+0.1	12.0	30.3	19.3	131.46	112.69	+25.57
South India	-.016	89.8	+0.3	72.4	-0.1	81.1	+0.1	17.4	46.8	27.3	43.11	44.56	-1.45
Mean of whole India from Table I	-.018	88.4	+0.4	68.7	+0.4	78.6	+0.4	19.9	57.8	31.7	66.70	62.75	+4.40
Ditto ditto from Table II	-.022	88.9	+0.9	68.7	+0.4	77.9	+0.7	20.4	60.0	...	...	...	...

The preceding data show that on the average of the whole year pressure was in moderate defect in the Indian area and temperature in slight excess. The rainfall of the year was more or less largely in excess in Assam,

the Indus Valley, Rajputana, Central India, the Deccan and West Coast, normal in the Gangetic Plain and Upper Sub-Himalayas, and in slight to moderate defect in Burma, Bengal and Orissa.

## APPENDIX.

The following account of a cyclonic storm which passed over Camorta in the Nicobars in the month of March 1892 was received from the Chief Commissioner of the Andamans. It was drawn up by Mr. Portman, Deputy Superintendent. It did not arrive in time to be utilized in the Weather Review of the month, and is given in full as accounts of cyclonic storms in low latitudes are of interest, more especially in connection with theories of the origin of cyclonic storms:—

I have the honour to inform you that, when paying my recent visit to the Nicobar Islands, I learnt from the natives at Car Nicobar, the first island at which we anchored, that they had, about a month before, been visited by a storm of unusual severity from the north-east which had caused damage to some of their buildings and plantations. On landing at Sáwi Bay and visiting Mús village, abundant evidence was found in support of their statements. I ascertained that it fortunately happened that no vessels were trading there at the time, or they would probably have been lost.

2. On proceeding southwards, we next anchored off the east coast of Teressa where there was little trace of anything unusual having occurred, but on arrival the same evening at Camorta and Nancowry, it was observed that the jungle and villages had suffered considerably from a recent storm. At the former Government station in the harbour it was found that, in addition to the roads being blocked by fallen branches of the fine Casuarina trees which had been planted in avenues, the large wooden barrack formerly occupied by the Police had collapsed bodily.

3. On questioning the meteorological observer at Nancowry, I learnt that at about 8 P.M. of the 23rd March they experienced very strong winds, accompanied with rain, from about north-east. It appears that they continued for some time, and that after a pause the wind returned blowing from the west or north-west with even greater force, till about daybreak when the storm ceased.

4. The oldest among the natives agree in saying that they have never before experienced such a severe storm as occurred that night, and, so far as I am aware, this is the first recorded instance of a cyclone visiting the Nicobars.

5. From the fact that the northern half of Nancowry Island suffered considerably, while the southern half escaped damage, it appears that the 8° parallel of latitude was the southernmost limit of the storm.

6. The meteorological observer reported that the Chinese junk "King Hing Lee" (to Pok Swan Masteo and 600 piquai burthen), which had arrived on the 15th March from Olehleh (Acheen) and was at anchor off Puli Pilan (north coast of Camorta), had been wrecked by the storm, but that there had been no loss of life. From his register it appears that a second junk ("Tin Tk Hin" 30 tons, Tjoen Hin Master) fortunately arrived from the same port a few days later, *viz.*, 30th March, and has since conveyed away the twenty-four ship-wrecked Chinamen of the former vessel.

7. From the return of the rainfall in March, submitted to your office by Mr. Enloy, I think it will be found that about 7 inches of rain was registered there on the 23rd and 24th of that month.

8. I should add that, on my subsequently visiting the southernmost group of islands, *viz.*, Great and Little Nicobar, etc., I ascertained that no unusual weather has been experienced there at the time referred to, and certainly no traces of damage due to high winds were met with.

### EXPLANATION OF PLATES.

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PLATE I.—A chart of India showing the 11 meteorological provinces and 51 districts of India.

PLATE II.—A chart of India showing the variation of the rainfall of the months of January and February 1892 from the normal. This chart and the three following charts have been prepared to illustrate the data given in Table XIV. These charts are drawn up in the same manner as the rainfall chart (Plate V) in the Monthly Weather Reviews of the year 1892.

PLATE III.—A chart of India showing the variation of the rainfall of the month of March to May 1892 from the normal.

PLATE IV.—A chart of India showing the variation of the rainfall of the months of June to October 1892 from the normal.

PLATE V.—A chart of India showing the variation of the rainfall of the months of November and December 1892 from the normal.

PLATE VI.—Chart showing the tracks of the more important cyclonic storms of 1892 in the Indian area during the south-west monsoon, a brief summary of which is given on pages 506-508.



**Explanation.**

The name of the districts can be at once ascertained by referring in the following list to the number given near the right hand boundary of each district in small slanting figures.

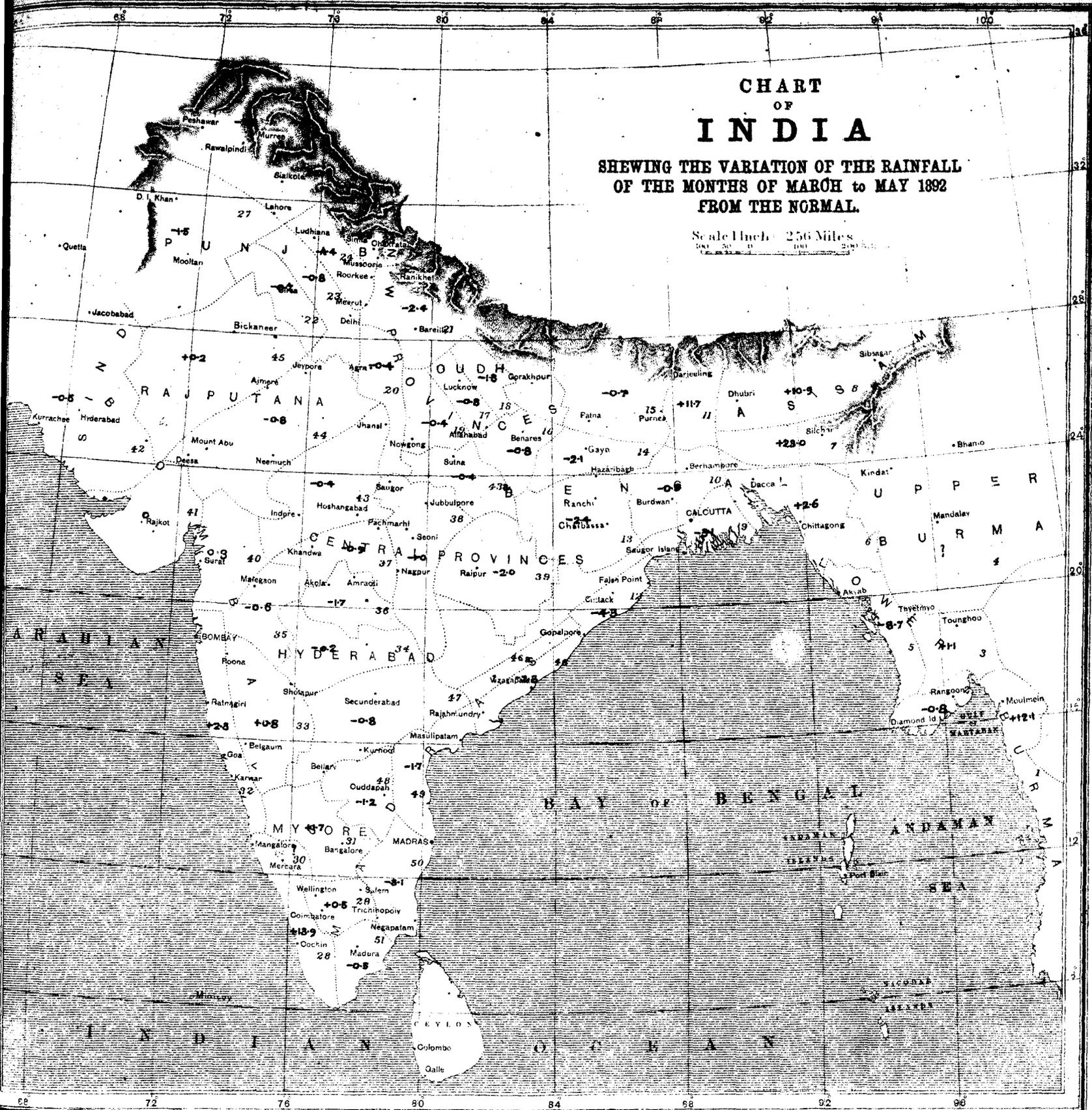
1. Tenasserim	14. Behar (South)	27. Punjab (West)	40. Guzerat
2. Lower Burma	15. Do. (North)	28. Malabar	41. Kattiawar
3. Central do.	16. North Western Provinces (East)	29. Madras (South Central)	42. Sind
4. Upper do.	17. Oudh (South)	30. Coorg	43. Central India (East)
5. Arakan	18. Do. (North)	31. Mysore	44. Rajputana (East) Central India (West)
6. Eastern Bengal	19. North Western Provinces (Central)	32. Konkan	45. Rajputana (West)
7. Assam (Surma)	20. Do. do. (West)	33. Bombay Deccan	46. East Coast (North)
8. Do. (Brahmaputra)	21. Do. do. (Submontane)	34. Hyderabad (North)	46(a.) Do. do. (a)
9. Deltaic Bengal	22. Punjab (South)	35. Khandeish	47. Hyderabad (South)
10. Central do.	23. Do. (Central)	36. Berar	48. Madras (Central)
11. North do.	24. Do. (Submontane)	37. Central Provinces (West)	49. East Coast (Central)
12. Orissa	25. Do. (Hill Districts)	38. Do. (Central)	50. East Coast (South)
13. Chota Nagpore	26. Do. (North West)	39. Do. (East)	51. Madras (South)



**Explanation.**

The Chart gives the variations of the rainfall of the month (to tenths of an inch) from the normal over the whole of India and Burma with the exception of Upper Burma, for which rainfall data have not been obtained for a sufficient number of years to furnish reliable and useful means. The country is divided into 51 areas over each of which the meteorological conditions are fairly uniform, and the staple crops similar in character: and the means (both actual and normal for the month) have been calculated, and the numbers given in the centre of each division (usually with a + or - sign attached) give the difference between the actual and normal mean rainfall of the district of the month. A plus sign indicates that the rainfall was in excess and a negative sign that it was in defect by the amounts indicated by the numbers to which the signs are attached. The name of the districts can be at once ascertained by referring in the following list to the number given near the right hand boundary of each district in small slanting figures.

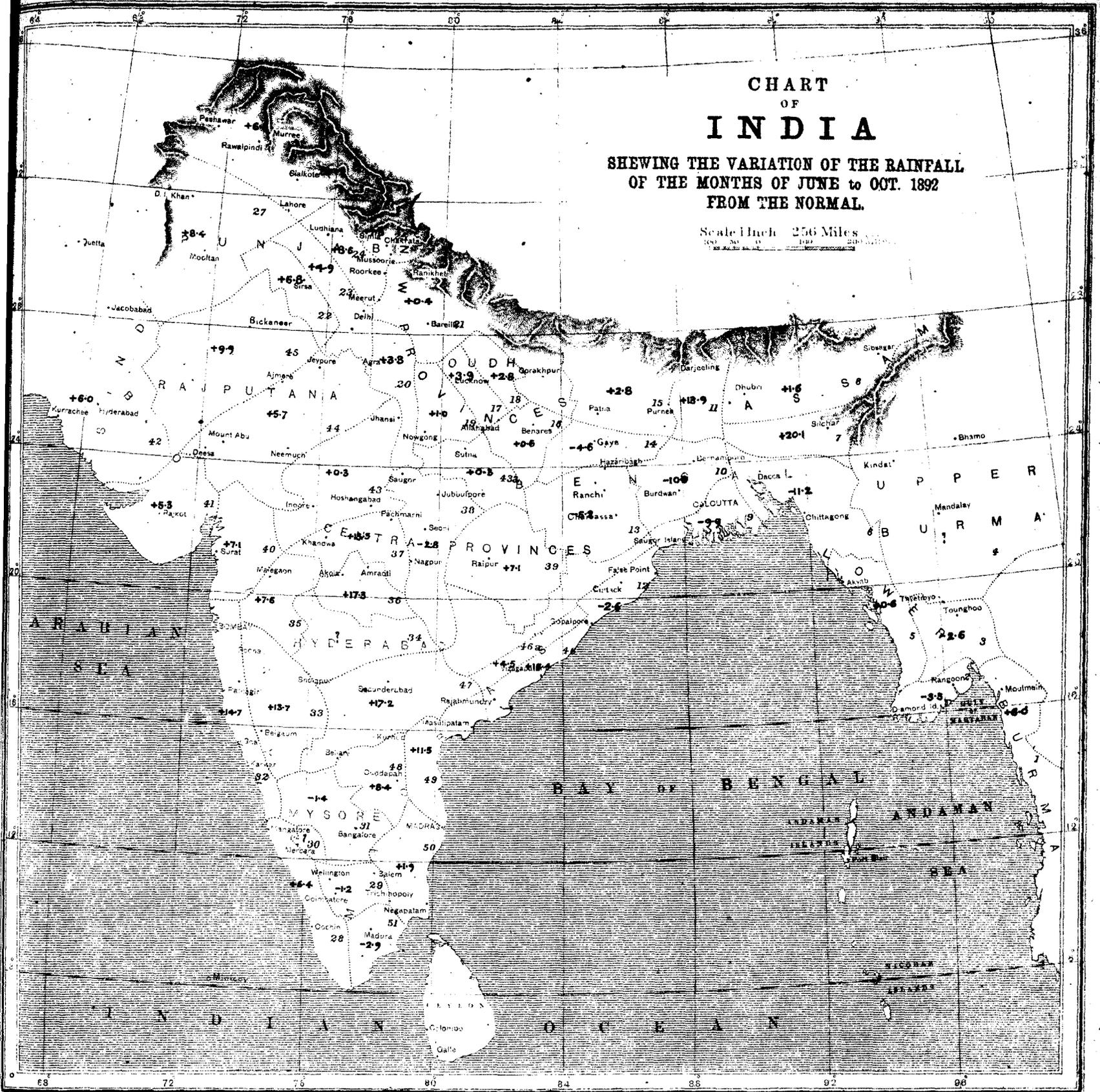
1. Tonasserim	15. Behar (North)	29. Madras (South Central)	43. Central India (East)
2. Lower Burma	16. North Western Provinces (East)	30. Coorg	43(a.) Do. do. (a)
3. Central do.	17. Oudh (South)	31. Mysore	44. Rajputana (East) Central India (West)
4. Upper do.	18. Do. (North)	32. Konkan	45. Rajputana (West)
5. Arakan	19. North Western Provinces (Central)	33. Bombay Deccan	46. East Coast (North)
6. Eastern Bengal	20. Do. do. (West)	34. Hyderabad (North)	46(a.) Do. do. (a)
7. Assam (Surma)	21. Do. do. (Submontane)	35. Khandeish	47. Hyderabad (South)
8. Do. Brahmaputra)	22. Punjab (South)	36. Berar	48. Madras (Central)
9. Deltaic Bengal	23. Do. (Central)	37. Central Provinces (West)	49. East Coast (Central)
10. Central do.	24. Do. (Submontane)	38. Do. (Central)	50. East Coast (South)
11. North do.	25. Do. (Hill Districts)	39. Do. (East)	51. Madras (South)
12. Orissa	26. Do. (North West)	40. Guzerat	
13. Chota Nagpore	27. Punjab (West)	41. Kattiawar	
14. Behar (South)	28. Malabar	42. Sind	



**Explanation.**

The Chart gives the variations of the rainfall of the month (to tenths of an inch) from the normal over the whole of India and Burma with the exception of Upper Burma, for which rainfall data have not been obtained for a sufficient number of years to furnish reliable and useful means. The country is divided into 51 areas over each of which the meteorological conditions are fairly uniform, and the staple crops similar in character; and the means (both actual and normal for the month) have been calculated, and the numbers given in the centre of each division (usually with a + or - sign attached) give the difference between the actual and normal mean rainfall of the district of the month. A plus sign indicates that the rainfall was in excess and a negative sign that it was in defect by the amounts indicated by the numbers to which the signs are attached. The name of the districts can be at once ascertained by referring in the following list to the number given near the right hand boundary of each district in small slanting figures

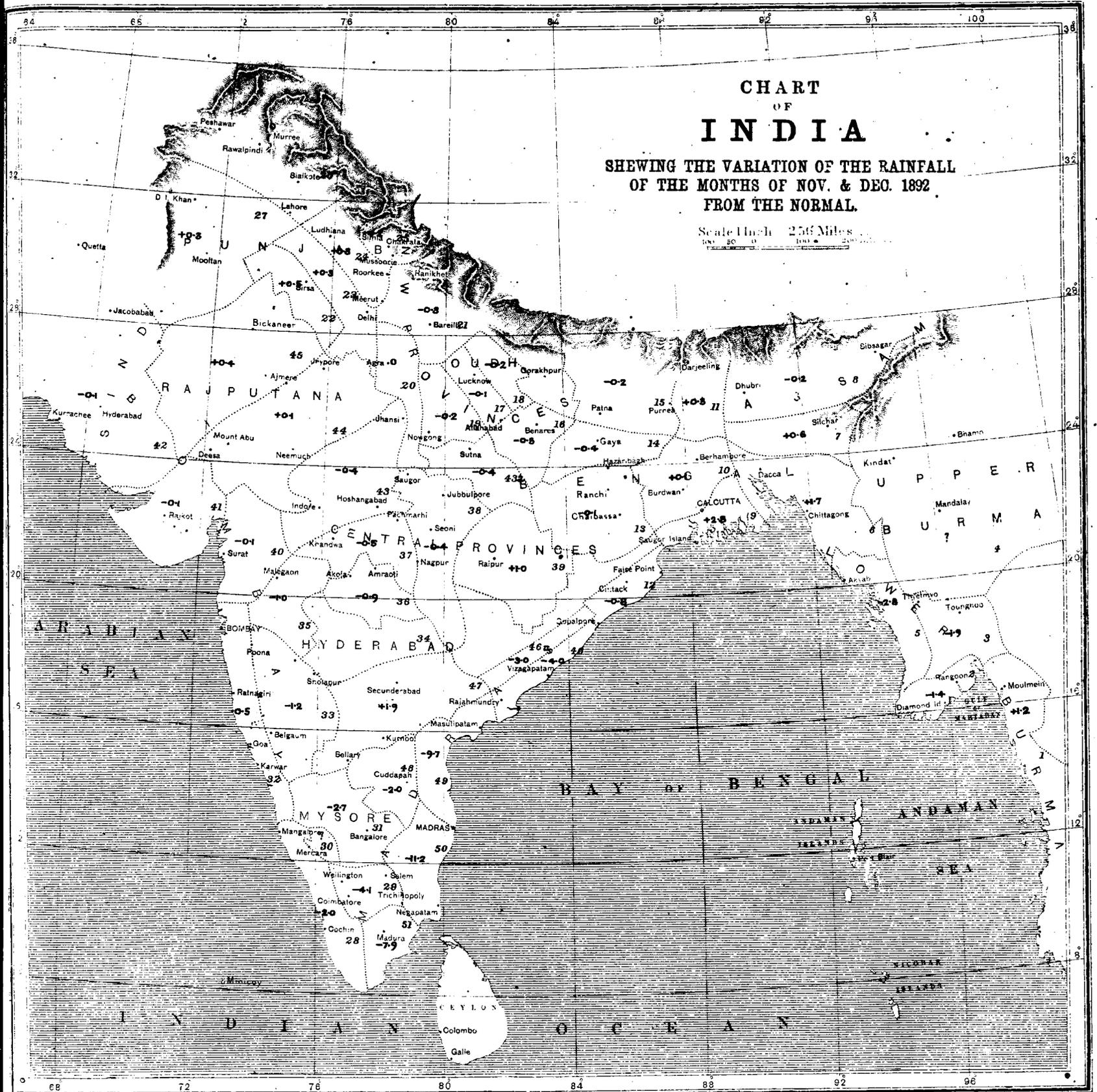
1. Tenasserim	15. Behar (North)	29. Madras (South Central)	43. Central India (East)
2. Lower Burma	16. North Western Provinces (East)	30. Coorg	43(a.) Do. do. (a)
3. Central do.	17. Oudh (South)	31. Mysore	44. Rajputana (East) Central India
4. Upper do.	18. Do. (North)	32. Konkan	(West)
5. Arakan	19. North Western Provinces (Central)	33. Bombay Deccan	45. Rajputana (West)
6. Eastern Bengal	20. Do. do. (West)	34. Hyderabad (North)	46. East Coast (North)
7. Assam (Surma)	21. Do. do. (Submontane)	35. Khandeish	46(a.) Do. do. (a)
8. Do. (Brahmaputra)	22. Punjab (South)	36. Berar	47. Hyderabad (South)
9. Deltaic Bengal	23. Do. (Central)	37. Central Provinces (West)	48. Madras (Central)
10. Central do.	24. Do. (Submontane)	38. Do. (Central)	49. East Coast (Central)
11. North do.	25. Do. (Hill Districts)	39. Do. (East)	50. East Coast (South)
12. Orissa	26. Do. (North West)	40. Guzerat	51. Madras (South)
13. Chota Nagpore	27. Punjab (West)	41. Kattiawar	
14. Behar (South)	28. Malabar	42. Sind	



**Explanation.**

The Chart gives the variations of the rainfall of the month (to tenths of an inch) from the normal over the whole of India and Burma with the exception of Upper Burma, for which rainfall data have not been obtained for a sufficient number of years to furnish reliable and useful means. The country is divided into 51 areas over each of which the meteorological conditions are fairly uniform, and the staple crops similar in character; and the means (both actual and normal for the month) have been calculated, and the numbers given in the centre of each division (usually with a + or - sign attached) give the difference between the actual and normal mean rainfall of the district of the month. A plus sign indicates that the rainfall was in excess and a negative sign that it was in defect by the amounts indicated by the numbers to which the signs are attached. The name of the districts can be at once ascertained by referring in the following list to the number given near the right hand boundary of each district in small slanting figures.

1. Tenasserim	15. Behar (North)	29. Madras (South Central)	43. Central India (East)
2. Lower Burma	16. North Western Provinces (East)	30. Coorg	43(a). Do. do. (a)
3. Central do.	17. Oudh (South)	31. Mysore	44. Rajputana (East) Central India
4. Upper do.	18. Do. (North)	32. Konkan	(West)
5. Arakan	19. North Western Provinces (Central)	33. Bombay Deccan	45. Rajputana (West)
6. Eastern Bengal	20. Do. do. (West)	34. Hyderabad (North)	46. East Coast (North)
7. Assam (Surma)	21. Do. do. (Submontane)	35. Khandeish	46(a). Do. do. (a)
8. Do. Brahmaputra)	22. Punjab (South)	36. Berar	47. Hyderabad (South)
9. Deltaic Bengal	23. Do. (Central)	37. Central Provinces (West)	48. Madras (Central)
10. Central do.	24. Do. (Submontane)	38. Do. (Central)	49. East Coast (Central)
11. North do.	25. Do. (Hill Districts)	39. Do. (East)	50. East Coast (South)
12. Orissa	26. Do. (North West)	40. Guzerat	51. Madras (South)
13. Chota Nagpore	27. Punjab (West)	41. Kattiawar	
14. Behar (South)	28. Malabar	42. Sind	



**Explanation.**

The Chart gives the variations of the rainfall of the month (to tenths of an inch) from the normal over the whole of India and Burma with the exception of Upper Burma, for which rainfall data have not been obtained for a sufficient number of years to furnish reliable and useful means. The country is divided into 51 areas over each of which the meteorological conditions are fairly uniform, and the staple crops similar in character; and the means (both actual and normal for the month) have been calculated, and the numbers given in the centre of each division (usually with a + or - sign attached) give the difference between the actual and normal mean rainfall of the district of the month. A plus sign indicates that the rainfall was in excess and a negative sign that it was in defect by the amounts indicated by the numbers to which the signs are attached. The name of the districts can be at once ascertained by referring in the following list to the number given near the right hand boundary of each district in small slanting figures.

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2. Lower Burma	16. North Western Provinces (East)	30. Coorg	43(a.) Do. do. (a)
3. Central do.	17. Oudh (South)	31. Mysore	44. Rajputana (East) Central India (West)
4. Upper do.	18. Do (North)	32. Konkan	45. Rajputana (West)
5. Arakaa	19. North Western Provinces (Central)	33. Bombay Deccan	46. East Coast (North)
6. Eastern Bengal	20. Do. do. (West)	34. Hyderabad (North)	46(a.) Do. do. (a)
7. Assam (Surma)	21. Do. do. (Submontane)	35. Khandeish	47. Hyderabad (South)
8. Do. (Sahanaputra)	22. Punjab (South)	36. Berar	48. Madras (Central)
9. Deltaic Bengal	23. Do. (Central)	37. Central Provinces (West)	49. East Coast (Central)
10. Central do.	24. Do. (Submontane)	38. Do. (Central)	50. East Coast (South)
11. North do.	25. Do. (Hill Districts)	39. Do. (East)	51. Madras (South)
12. Orissa	26. Do. (North West)	40. Guzerat	
13. Chota Nagpore	27. Punjab (West)	41. Kattiawar	
14. Behar South,	28. Malabar	42. Sind	



Table

Abstract of Observations taken at 8 A.M.

METEOROLOGICAL PROVINCE OR DISTRICT.	STATION.	Elevation of bar-cistern above sea-level in feet.	PRESSURE, 8 A.M., IN INCHES.							TEMPERATURE OF AIR.											
			Mean actual pressure (reduced to 32°) of year.	Variation from normal.	Mean pressure of year reduced to sea-level and to constant gravity 45° Lat.	Highest pressure recorded during year.	Lowest pressure recorded during year.	Absolute range during year.	Mean monthly range of pressure.	Mean of 8 A.M. of year.	Mean maximum of year.	Variation from normal of year.	Mean minimum of year.	Variation from normal of year.	Mean daily temperature of year.	Variation from normal of year.	Mean daily range of temperature.	Highest temperature observed during year.	Lowest temperature observed during year.	Absolute range during year.	Mean monthly absolute range.
<b>I.—Burma Coast and Bay Islands.</b>			...	...	-.017	...	...	...	...	...	87.1	-0.3	72.7	-0.5	80.0	-0.4	14.5	...	...	38.2	22.8
BAY ISLANDS . . .	Port Blair . . .	61	29.824	P	29.816	30.026	29.635	.391	.182	80.5	86.7	P	77.1	P	81.9	P	9.6	93.8	69.9	23.9	17.1
	Camorta . . .	P	29.894	P	P	30.043	29.735	.308	.172	80.2	85.1	P	76.1	P	80.6	P	9.0	89.8	71.7	18.1	14.7
TENASSERIM . . .	Mergui . . .	96	29.810	P	29.839	30.047	29.612	.435	.172	77.0	86.6	P	P	P	P	?	94.4	P	P	P	P
	Tavoy . . .	26	29.905	P	29.862	30.154	29.720	.434	.169	76.2	87.2	P	70.7	P	79.1	P	16.6	96.2	49.6	46.6	25.7
LOWER BURMA . . .	Moulmein . . .	94	29.815	-.017	29.848	30.089	29.576	.513	.192	76.4	87.8	-0.2	72.9	+0.9	80.4	+0.4	15.0	98.4	56.4	42.0	23.5
	Toungoo . . .	181	29.704	-.015	29.830	29.979	29.427	.552	.195	74.5	89.3	-0.8	70.0	-0.2	80.1	-0.5	19.3	101.7	51.1	50.6	29.8
	Rangoon . . .	41	29.854	-.024	29.833	30.130	29.589	.541	.195	75.7			72.5	-0.3	P	P	P		56.7	P	P
	Bassein . . .	27	29.877	-.010	29.839	30.146	29.586	.560	.194	75.7	88.0	+0.1	71.3	-0.5	79.7	-0.2	16.7	98.7	55.0	43.7	24.1
ARAKAN . . .	Diamond Island . . .	41	29.857	-.019	29.833	30.112	29.572	.540	.158	79.8	P	P	73.9	-1.2	P	P	P		64.1	P	P
	Akyab . . .	20	29.864	-.016	29.827	30.158	29.444	.714	.227	75.4	85.7	-0.4	70.2	-1.9	78.0	-1.2	15.5	94.6	52.2	42.4	24.5
<b>II.—Burma Inland.</b>			...	...	-.005	...	...	...	...	...	89.4	0	67.2	-1.0	78.9	-0.5	23.2	...	...	60.7	34.7
CENTRAL BURMA . . .	Thayetmyo . . .	134	29.749	-.005	29.827	30.056	29.403	.653	.201	75.8	91.7	0	68.5	-1.0	80.1	-0.5	23.2	104.7	43.9	60.8	33.9
UPPER BURMA . . .	Mandalay . . .	P	29.617	P	P	29.951	29.260	.691	.233	77.0	82.3		68.7	P	80.9	P	24.4	106.9	45.1	61.8	36.8
	Kendat . . .	P	P	P	P	P	P	P	P	72.6	87.1	P	P	P	P	P	103.7	P	P	P	P
	Bhamo . . .	P	29.469	P	P	29.806	29.128	.678	.240	70.3	86.6	P	64.5	P	75.6	P	22.0	101.1	41.7	59.4	33.3
<b>III.—Assam.</b>			...	...	-.012	...	...	...	...	...	83.4	-0.2	67.5	+0.4	75.5	+0.1	15.9	...	...	49.9	26.9
ASSAM (SURMA) . . .	Slichar . . .	104	29.768	-.016	29.820	30.089	29.301	.788	.275	72.0	85.5	-0.2	67.5	+0.1	76.5	0	18.0	97.6	46.0	51.6	29.8
BRAHMAPUTRA . . .	Sibsagar . . .	333	29.565	-.005	29.861	29.908	29.177	.731	.236	70.0	82.1	-0.1	66.8	+0.9	74.5	+0.4	15.3	96.1	45.1	51.0	26.4
	Dhubri . . .	115	29.734	-.022	29.806	30.092	29.297	.795	.299	71.2	82.7	-0.4	68.3	+0.1	75.5	-0.2	14.4	97.1	50.0	47.1	24.4
<b>IV.—Bengal and Orissa.</b>			...	...	-.014	...	...	...	...	...	87.1	+0.3	69.5	-0.1	78.3	+0.1	17.3	...	...	54.2	28.2
EAST BENGAL . . .	Chittagong . . .	87	29.789	-.008	29.824	30.088	29.333	.755	.258	74.7	85.1	+0.8	69.3	-0.1	77.2	+0.4	15.8	95.2	50.1	45.1	25.5
	Lungich . . .	P	P	P	P	P	P	P	P	64.6	P	P	P	P	P	P	P	P	P	P	P
	Noakhali . . .	43	29.816	P	29.806	30.135	29.351	.784	.276	75.4	84.4	P	68.9	P	76.7	P	15.5	93.3	46.0	47.3	25.7
	Comilla . . .	35	29.826	P	29.809	30.138	29.362	.776	.275	74.1	85.8	P	68.7	P	77.3	P	17.2	97.3	48.1	49.2	28.1
	Sirajganj . . .	46	29.790	P	29.787	30.128	29.330	.798	.293	73.2	85.7	P	67.6	P	76.7	P	18.0	101.3	44.5	56.8	29.0
	Dacca . . .	22	29.823	-.016	29.793	30.172	29.359	.813	.290	74.9	86.8	+0.2	70.4	0	78.6	+0.1	16.4	99.6	49.7	49.9	26.9
	Barisal . . .	13	29.839	0	29.797	30.176	29.337	.839	.285	75.7	86.0	P	69.9	P	78.0	P	16.1	96.3	48.6	47.7	27.1
DELTAIC BENGAL . . .	Mymensingh . . .	63	29.794	P	29.807	30.127	29.341	.786	.281	72.4	84.1	P	68.3	P	76.2	P	15.7	96.5	47.1	49.4	26.3
	Faridpur . . .	46	29.814	P	29.806	30.160	29.341	.819	.301	74.6	84.9	P	69.1	P	77.0	P	15.7	100.0	47.0	53.0	27.2
	Jessore . . .	33	29.805	-.019	29.786	30.147	29.321	.826	.306	75.1	87.6	-0.3	69.6	-0.3	78.6	-0.3	18.1	103.2	47.4	55.8	28.6
	Calcutta . . .	21	29.816	-.015	29.783	30.171	29.268	.903	.307	75.5	86.9	+0.7	70.1	-0.5	78.5	+0.1	16.9	102.5	49.2	53.3	27.5
	Saugor Island . . .	25	29.812	-.015	29.782	30.166	29.216	.950	.308	77.5	85.3	-0.2	73.8	+0.2	79.5	0	11.5	94.2	51.7	42.5	21.5
	Krishnagar . . .	47	29.784	P	29.780	30.141	29.303	.838	.310	75.4	88.9	P	68.8	P	78.9	P	20.2	108.2	45.2	63.0	32.1
	Midnapore . . .	149	29.689	P	29.786	30.046	29.088	.958	.307	76.8	91.2	P	70.4	P	80.8	P	20.8	112.4	48.2	64.2	33.0



Table

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METEOROLOGICAL PROVINCE OR DISTRICT.	STATION.	Elevation of bar-cistern above sea-level in feet.	PRESSURE, 8 A.M., IN INCHES.							TEMPERATURE OF AIR.												
			Mean actual pressure (reduced to 32° of year.	Variation from normal.	Mean pressure of year reduced to sea-level and to constant gravity 45° Lat.	Highest pressure recorded during year.	Lowest pressure recorded during year.	Absolute range during year.	Mean monthly range of pressure.	Mean of 8 A.M. of year.	Mean maximum of year.	Variation from normal of year.	Mean minimum of year.	Variation from normal of year.	Mean daily temperature of year.	Variation from normal of year.	Mean daily range of temperature.	Highest temperature observed during year.	Lowest temperature observed during year.	Absolute range during year.	Mean monthly absolute range.	
CENTRAL BENGAL	Bankura	298	29.504†	?	29.757†	29.853†	29.000†	.853	.297	74.8	90.5	?	70.0	?	80.3	?	20.5	112.1	47.8	64.3	32.3	
	Raniganj	334*	29.494	?	29.795	29.862	29.010	.852	.301	74.1	?	?	69.4	?	?	?	?	?	47.2	?	?	
	Burdwan	99	29.742	-.011	29.789	30.098	29.222	.876	.307	75.4	89.9	+1.2	?	?	?	?	?	108.7	?	?	?	
	Naya Dumka	489	29.320	?	29.775	29.668	28.849	.819	.295	74.1	88.8	?	68.4	?	78.6	?	20.4	111.7	44.0	67.7	32.4	
	Berhampore	67	29.763	-.024	29.779	30.131	29.300	.831	.304	73.4	88.3	+0.5	70.0	+0.6	79.2	+0.6	18.3	108.7	48.1	60.6	29.8	
	Rampur Boalia	70	29.757	?	29.777	30.108	29.295	.813	.297	74.8	?	?	68.9	?	?	?	?	?	?	45.7	?	?
	Malda	80	29.752	?	29.785	30.126	29.299	.827	.297	74.8	88.3	?	?	?	?	?	?	?	104.1	?	?	?
	Bogra	61	29.760	?	29.775	30.103	29.312	.791	.286	73.1	?	?	67.7	?	?	?	?	?	?	45.2	?	?
NORTH BENGAL	Dinajpur	118	29.709	?	29.784	30.066	29.283	.783	.292	72.3	86.1	?	66.7	?	76.5	?	19.4	101.1	40.5	60.6	30.9	
	Rangpur	123	29.727	?	29.807	30.074	29.286	.788	.297	71.9	85.1	?	66.7	?	76.0	?	18.4	98.0	43.0	55.0	29.0	
	Jalpaiguri	284	29.553	?	29.797	29.896	29.091	.805	.300	71.8	84.2	?	66.4	?	75.3	?	17.8	95.4	46.1	49.3	27.6	
ORISSA	Balasore	56	29.774	?	29.777	30.166	28.730	1.436	.354	75.9	89.3	?	70.4	?	79.9	?	18.9	112.5	47.7	64.8	31.0	
	False Point	21	29.827	-.011	29.790	30.188	29.155	1.033	.306	77.3	85.9	-0.1	72.0	-0.1	79.0	-0.1	13.8	96.5	49.5	47.0	24.0	
	Cuttack	80	29.761	-.007	29.785	30.125	29.188	.937	.302	77.1	91.6	+0.2	72.1	-0.3	81.9	-0.1	19.5	112.4	51.9	60.5	30.3	
	Puri	15†	29.826	?	29.773	30.179	29.289	.890	.292	77.9	86.3	?	74.4	?	80.4	?	12.0	96.7	56.6	40.1	22.4	
V.—Gangetic Plain and Chota Nagpur.		...	...	-.025	...	...	...	...	...	...	88.9	+0.7	67.4	+0.4	78.2	+0.5	21.5	...	...	67.5	33.9	
CHOTA NAGPUR	Hazaribagh	2,007	27.808	-.020	29.772	28.119	27.385	.734	.267	73.1	85.9	+1.5	66.0	+0.8	76.0	+1.2	19.9	109.1	44.7	64.4	31.3	
	Ranchi	2,128	27.688	?	29.767	27.989	27.254	.735	.263	73.0	85.1	?	65.5	?	75.3	?	19.7	107.5	44.2	63.3	31.3	
	Chaibassa	760	29.042	-.018	29.757	29.404	28.491	.913	.295	75.6	91.2	?	69.1	?	80.2	?	22.2	114.8	45.3	69.5	34.1	
BIHAR, SOUTH	Gaya	375	29.433	-.029	29.766	29.810	28.980	.830	.281	76.0	90.9	+0.9	70.0	+1.7	80.5	+1.3	20.9	114.1	45.5	68.6	32.1	
	Dehri	351	29.457	?	29.765	29.836	28.996	.840	.292	76.0	90.5	?	69.5	?	80.0	?	21.0	112.5	45.6	66.9	34.7	
	Patna	183	29.634	-.032	29.772	30.013	29.178	.835	.295	76.0	87.3	-0.5	68.8	+0.6	78.1	+0.1	18.5	109.6	44.4	65.2	30.5	
	Arrah	190	29.618	?	29.764	30.005	29.157	.848	.292	74.2	90.2	?	?	?	?	?	?	?	111.9	?	?	
	Buxar	239	29.577	?	29.775	29.965	29.121	.844	.292	75.2	89.3	?	68.7	?	79.0	?	20.7	109.9	44.4	65.5	33.0	
	Purnea	125	?	?	?	?	?	?	?	70.5	86.9	-0.1	65.3	-1.2	76.1	-0.6	21.6	105.3	38.3	67.0	33.1	
BIHAR, NORTH	Bhagalpur	160	29.654	?	29.770	30.041	29.199	.842	.306	74.6	88.8	?	67.9	?	78.4	?	21.0	108.8	44.5	64.3	32.3	
	Darbhanga	166	29.667	-.017	29.790	30.059	29.226	.833	.298	73.1	86.8	+1.2	67.5	-1.1	77.2	+0.1	19.2	105.5	45.4	60.1	29.8	
	Muzaffarpur	178	29.638	?	29.774	30.020	29.193	.827	.293	72.2	87.7	?	67.0	?	77.4	?	20.7	106.7	41.8	64.9	32.5	
	Motihari	224	29.582	?	29.769	29.963	29.147	.816	.296	71.8	88.2	?	64.7	?	76.5	?	23.6	106.2	39.0	67.2	35.2	
	Chapra	181	29.627	?	29.765	30.009	29.171	.838	.293	73.9	89.3	?	68.2	?	78.8	?	21.1	110.7	44.7	66.0	33.1	
N.-W. PROVINCES (EASTERN DISTRICTS).	Benares	267	29.541	-.025	29.770	29.930	29.083	.847	.284	73.4	90.5	+0.6	67.2	+0.3	78.9	+0.4	23.4	112.3	39.9	72.4	37.1	
	Allahabad	309	29.493	-.035	29.763	29.889	29.054	.835	.290	75.0	92.0	+1.9	67.8	+1.1	79.9	+1.6	24.2	115.4	40.9	74.5	38.4	
N.-W. PROVINCES (EAST SUBMONTANE).	Gorakhpur	256	29.549	-.026	29.769	29.938	29.083	.855	.299	73.6	88.1	-0.4	67.4	+0.3	77.8	-0.1	20.7	108.3	44.3	64.0	31.8	
	Lucknow	375†	29.408†	-.043†	29.755†	29.830	29.010	.820	.288	72.7	90.8	+1.1	66.0	+0.8	78.4	+0.9	24.8	112.3	38.0	74.3	39.0	
N.-W. PROVINCES (CENTRAL).	Cawnpore	416	29.389	?	29.772	29.784	28.971	.813	.277	74.7	90.5	?	66.3	?	78.4	?	24.2	111.1	37.0	77.1	38.7	
VI.—Upper Sub-Himalayas		...	...	-.027	...	...	...	...	...	...	87.9	+0.6	63.4	+0.9	75.7	+0.7	24.5	...	...	78.8	40.3	
N.-W. PROVINCES (SUBMONTANE).	Bareilly	568	29.214	-.032	29.759	29.620	28.771	.849	.288	70.8	87.9	+0.2	64.6	+0.2	76.3	+0.2	23.3	112.4	36.7	75.7	37.2	
	Dehra Dun	2,233	27.574	?	29.778	27.927	27.165	.762	.276	67.1	83.4	?	61.6	?	72.6	?	21.8	108.5	39.0	69.5	35.0	
	Roorkee	887	28.895	-.032	29.770	29.305	28.440	.865	.295	68.4	88.5	+1.2	62.9	+0.4	75.7	+0.8	25.6	113.7	34.8	78.9	40.4	
	Meerut	738	29.055	-.020	29.774	29.461	28.589	.872	.288	70.5	88.4	+0.3	64.2	+0.6	76.3	+0.5	24.1	111.2	37.5	73.7	38.6	

\* Hitherto erroneously given as 345 feet.  
 † Was 370 feet previous to 4th November 1892.

I—contd.

at 165 Stations in India, Burma, etc., in the year 1892—contd.

Calm.	WIND DIRECTION.								WIND VELOCITY.			HYGROMETRY 8 A.M.		Mean cloud amount of year.	RAINFALL.						STATION.	METEOROLOGICAL PROVINCE OR DISTRICT.		
	Number of winds from								Mean velocity in miles per hour.	Normal.	Percentage variation.	Mean humidity of year.	Mean vapour tension of year.		Number of rainy days during year.	Normal number of rainy days.	Variation.	Rainfall of year.	Normal rainfall of year.	Variation from normal of year.			Heaviest rainfall in 24 hours during year.	
	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.																
96	27	4	22	19	91	9	59	38	3.8	?	?	74	?	3.5	60	82.85	-22.85	42.38	56.76	-14.38	2.97	Bankura	CENTRAL BENGAL.	
29	21	24	22	36	35	48	23	62	?	?	?	76	?	2.6	65	72.85	-7.85	48.05	53.25	-5.20	3.74	Raniganj.		
74	35	7	22	27	81	68	28	24	4.0	3.3	+21	71	.674	4.2	62	78.00	-16.00	40.80	55.87	-15.07	2.43	Burdwan.		
70	18	7	52	48	54	25	26	66	4.5	?	?	73	?	1.7	76	79.39	-3.39	43.38	57.26	-13.88	2.57	Naya Dumka.		
34	24	13	48	32	90	55	43	27	3.3	3.4	-3	86	.745	4.7	77	77.93	-0.93	53.09	56.52	-3.43	5.14	Berhampore.		
60	39	38	15	71	45	69	13	16	4.1	?	?	81	?	2.8	71	74.56	-3.56	41.91	58.23	-16.32	3.52	Rampur Boalia.		
28	...	16	8	117	22	73	1	97	3.6	?	?	80	?	3.0	68	68.30	-0.30	50.10	55.98	-5.88	2.94	Malda.		
102	15	20	77	83	8	15	16	20	3.0	?	?	85	.727	3.8	90	81.63	+8.37	62.01	67.93	-5.92	4.66	Bogra.		
...	15	63	83	60	33	50	48	14	2.5	?	?	83	.705	4.5	84	77.10	+6.90	71.92	69.43	+2.49	4.05	Dinajpur		NORTH BENGAL.
36	18	27	160	26	46	14	36	1	2.1	?	?	88	?	1.7	91	78.70	+12.30	104.44	82.75	+21.69	4.48	Rangpur.		
55	47	89	54	101	7	3	3	7	?	?	?	87	.705	2.9	117	103.89	+13.11	158.96	127.63	+31.33	15.37	Jalpaiguri.		
17	70	21	11	1	67	114	13	52	6.1	?	?	81	.758	2.3	58	84.60	-26.60	41.91	65.19	-23.28	3.54	Balasure	ORISSA.	
6	52	7	13	14	61	96	64	53	11.3	9.3	+22	84	.811	4.8	67	75.00	-8.00	56.85	64.38	-7.53	8.26	False Point.		
124	5	19	17	6	44	93	44	14	3.2	2.8	+14	75	.721	4.4	78	75.35	+2.65	52.41	58.20	-5.79	3.54	Cuttack.		
37	101	23	10	7	16	132	22	16	12.6	?	?	82	?	3.8	50	67.60	-17.60	39.89	54.40	-14.51	4.55	Puri.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	44.93	45.66	-0.73	...	V.—Gangetic Plain and Chota Nagpur.	
14	17	5	19	22	76	74	96	43	9.5	6.6	+44	62	.509	4.2	74	75.64	-1.64	47.28	51.28	-4.00	3.97	Hazaribagh	CHOTA NAAGPUR.	
136	4	8	11	10	20	85	46	42	?	?	?	65	?	3.3	70	82.69	-12.69	56.46	56.20	+0.26	3.45	Ranchi.		
69	6	21	20	17	45	117	60	11	1.6	?	?	71	.657	3.4	61	77.21	-16.21	50.56	55.84	-5.28	4.09	Chaibassa.		
3	13	8	66	12	138	22	91	7	5.9	2.6	+127	70	.660	3.3	56	56.18	-0.18	42.21	46.94	-4.73	4.34	Gaya	BIHAR, SOUTH.	
12	3	6	52	37	50	162	36	8	?	?	?	66	?	2.1	52	54.77	-2.77	35.25	43.11	-7.86	4.65	Dehri.		
13	4	12	130	20	29	17	133	8	4.8	3.1	+55	69	.654	3.4	52	55.72	-3.72	46.63	45.18	+1.45	5.41	Patna.		
1	16	39	57	49	27	36	97	43	3.3	?	?	?	?	1.7	51	55.69	-4.69	38.45	42.19	-3.74	3.70	Arrah.		
4	6	23	95	17	13	23	134	51	5.3	?	?	67	?	3.0	56	54.00	+2.00	40.47	39.84	+0.63	3.43	Buxar.		
203	2	36	65	19	9	15	13	4	1.8	2.3	-22	85	.678	3.3	77	70.37	+6.63	67.18	65.76	+1.42	4.01	Purnea	BIHAR, NORTH.	
237	2	17	47	23	14	13	12	1	2.2	?	?	74	?	3.8	54	59.35	-6.35	33.00	45.09	-12.09	4.18	Bhagalpur.		
50	7	40	99	49	9	36	45	24	4.4	4.1	+7	79	.661	2.8	62	61.17	+0.83	49.71	50.70	-0.99	2.84	Darbhanga.		
64	4	31	95	63	3	32	50	18	5.3	?	?	82	?	2.8	61	56.46	+4.54	42.44	48.45	-6.01	5.17	Muzaffarpur.		
43	6	57	90	37	2	35	79	16	5.8	?	?	79	?	2.8	56	53.18	+2.82	68.97	47.21	+21.76	5.21	Motihari.		
84	3	13	95	32	17	73	41	8	4.1	?	?	74	?	2.4	52	51.35	+0.65	42.63	42.50	+0.13	3.93	Chapra.		
119	1	25	44	10	13	81	68	5	4.1	3.9	+5	76	.623	3.0	53	50.54	+2.46	44.58	38.06	+6.52	3.84	Benares	N.-W. PROVINCES (EASTERN DISTRICTS).	
64	9	32	45	17	15	43	87	54	4.6	3.0	+53	64	.579	3.3	50	48.47	+1.55	34.92	35.15	-0.23	2.78	Allahabad.		
20	29	19	61	39	44	12	118	24	2.0	2.5	-20	72	.634	2.0	54	52.29	+1.71	39.07	47.47	-8.40	2.80	Gorakhpur	N.-W. PROVINCES (EAST SUBMONTANE). OUDH, SOUTH.	
122	18	11	55	14	12	8	80	31	?	?	?	71	.591	3.1	54	46.83	+7.17	39.11	35.51	+3.60	4.58	Lucknow		
45	13	20	41	36	28	40	114	28	3.9	?	?	70	.622	3.8	47	41.40	+5.60	34.77	30.99	+3.78	2.48	Cawnpore	N.-W. PROVINCES (CENTRAL).	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	39.07	39.70	-0.62	...		VI.—Upper Sub-Himalayas.
238	6	5	10	54	1	...	9	43	1.3	3.6	-64	72	.590	2.3	48	47.17	+0.83	44.94	48.35	-3.41	5.54	Bareilly	N.-W. PROVINCES (SUBMONTANE).	
351	1	3	3	1	2	...	5	...	1.2	1.8	-33	66	.468	3.8	75	79.59	-4.59	80.16	86.28	-6.12	4.19	Dehra Dun.		
235	2	3	14	50	19	2	9	32	2.4	2.5	-4	71	.518	3.4	46	46.57	-0.57	35.25	43.72	-8.47	2.18	Roorkee.		
143	3	4	46	34	1	12	112	11	2.3	2.2	+5	64	.508	2.8	44	39.18	+4.82	38.87	33.03	+5.84	2.90	Meerut.		

Table

Abstract of Observations taken at 8 A.M.

METEOROLOGICAL PROVINCE OR DISTRICT.	STATION.	Elevation of bar-cistern above sea level in feet.	PRESSURE, 8 A.M., IN INCHES.							TEMPERATURE OF AIR.											
			Mean actual pressure (reduced to 32°) of year.	Variation from normal.	Mean pressure of year reduced to sea level and to constant gravity 45° Lat.	Highest pressure recorded during year.	Lowest pressure recorded during year.	Absolute range during year.	Mean monthly range of pressure.	Mean of 8 A.M. of year.	Mean maximum of year.	Variation from normal of year.	Mean minimum of year.	Variation from normal of year.	Mean daily temperature of year.	Variation from normal of year.	Mean daily range of temperature.	Highest temperature observed during year.	Lowest temperature observed during year.	Absolute range during year.	Mean monthly absolute range.
PUNJAB, CENTRAL .	Delhi . . . . .	718	29.086	-.014	29.778	29.492	28.653	.839	.284	73.9	89.0	-0.6	68.9	+1.8	79.0	+0.6	20.0	114.0	44.1	69.9	35.0
	Lahore . . . . .	702	29.074	-.029	29.762	29.516	28.570	.946	.319	71.0	90.5	+1.5	82.5	+0.7	76.5	+1.1	27.9	118.3	31.2	87.1	48.0
	Ludhiana . . . . .	812	28.963	-.034	29.760	29.385	28.478	.907	.294	71.2	89.1	+0.2	64.4	+1.2	76.8	+0.7	25.0	117.3	34.3	83.0	41.8
	Sialkot . . . . .	830	28.942	-.026	29.762	29.370	28.470	.900	.311	70.4	89.0	+1.2	63.7	+1.6	76.4	+1.4	25.3	116.4	29.3	87.1	44.4
PUNJAB, SUBMONTANE.	Rawalpindi . . . . .	1,649	28.137	-.026	29.763	28.546	27.661	.885	.316	65.3	85.2	+0.9	57.5	+0.3	71.4	+0.6	27.8	111.0	26.9	84.1	44.5
VII.—Indus Valley and North-West Rajputana.			...	...	-.028	...	...	...	...	...	92.5	+1.8	65.8	+1.5	79.4	+1.6	26.5	...	...	79.5	43.4
PUNJAB, WEST .	Peshawar . . . . .	1,110	28.712	-.016	29.780	29.169	28.154	1.015	.344	68.6	87.5	+1.8	60.5	+1.7	74.0	+1.8	27.0	117.0	30.9	86.1	45.2
	Khushab . . . . .	612	29.158	?	29.753	29.616	28.632	.984	.339	71.7	?	?	63.3	?	?	?	?	?	29.1	?	?
	Montgomery . . . . .	558	29.220	?	29.756	29.685	28.704	.981	.326	74.1	93.6	?	64.4	?	79.0	?	29.2	120.4	33.3	87.1	47.4
	D. I. Khan . . . . .	573	29.203	-.040	29.762	29.676	28.627	1.049	.335	69.5	92.6	+2.1	63.0	+0.8	77.8	+1.5	28.6	120.5	32.0	88.5	48.2
	Mooltan . . . . .	420	29.360	-.035	29.758	29.822	28.817	1.005	.330	73.5	93.6	+2.6	66.9	+2.6	80.3	+2.6	26.7	120.3	39.1	81.2	43.7
	Sirsa . . . . .	662	29.121	-.030	29.761	29.564	28.657	.907	.304	71.9	91.6	+1.1	65.3	+2.0	78.9	+1.6	27.2	117.4	34.7	82.7	44.7
SIND AND CUTCH .	Jacobabad . . . . .	186	29.611	-.017	29.762	30.097	29.004	1.093	.305	75.0	97.2	+2.2	65.5	+0.9	81.4	+1.6	31.7	121.0	34.0	87.0	48.3
	Hyderabad . . . . .	117	29.691	-.027	29.762	30.150	29.155	.995	.279	74.6	94.3	+1.2	69.2	+1.0	81.8	+1.1	25.0	116.7	46.3	70.4	39.6
	Kurrachee . . . . .	49	29.788	-.030	29.789	30.200	29.301	.899	.282	75.2	88.3	+1.5	70.7	+1.5	79.5	+1.3	17.6	109.6	48.1	61.5	31.1
	Bhuj . . . . .	395	29.436	?	29.789	29.795	28.934	.861	.268	?	92.0	?	?	?	?	?	?	?	?	?	?
RAJPUTANA, WEST .	Bickaneer . . . . .	753*	29.035	?	29.758	29.472	28.567	.905	.295	75.4	92.0	?	69.9	?	81.0	?	22.1	116.8	43.1	73.7	39.3
	Pachpadra . . . . .	380	29.436	?	29.780	29.873	28.992	.881	.297	72.2	94.6	?	65.4	?	80.0	?	29.2	114.5	38.0	76.5	46.4
VIII.—East Rajputana, Central India and Guzerat.			...	...	-.018	...	...	...	...	...	91.2	+0.9	67.8	+1.6	79.5	+1.3	23.8	...	...	67.6	38.0
RAJPUTANA, EAST .	Jeyapore . . . . .	1,431	28.395	-.021	29.801	28.758	27.982	.776	.265	73.8	91.2	+1.1	66.3	+1.8	78.8	+1.5	24.8	113.3	39.2	74.1	40.4
	Sambhar . . . . .	1,254	28.551	-.028	29.785	28.925	28.162	.763	.260	71.7	89.9	+1.2	65.6	+1.1	77.8	+1.2	24.3	112.5	36.5	76.0	40.8
	Ajmere . . . . .	1,611	28.229	-.013	29.822	28.594	27.836	.758	.269	72.4	89.5	+0.9	66.2	+3.0	77.9	+2.0	23.2	111.5	35.0	76.5	39.1
	Deesa . . . . .	466	29.382	-.017	29.811	29.728	28.925	.803	.276	75.3	94.8	+1.7	68.3	+1.6	81.5	+1.7	26.5	114.5	44.1	70.4	41.7
KATHIWAR .	Rajkot . . . . .	429	29.426	-.020	29.814	29.723	28.948	.775	.247	74.9	93.0	-0.1	66.5	+0.6	79.8	+0.3	26.5	111.4	44.0	67.4	39.5
	Veraval . . . . .	?	29.846	?	29.806	30.145	29.397	.748	.233	77.2	?	?	70.9	?	?	?	?	?	49.3	?	?
	Bhavnagar . . . . .	?	29.813	?	29.799	30.143	29.401	.742	.270	77.0	91.9	?	71.5	?	81.7	?	20.4	107.4	51.0	56.4	33.1
CENTRAL INDIA .	Nowgong . . . . .	757	29.061	-.021	29.787	29.455	28.703	.752	.260	73.5	89.9	-0.3	?	?	?	?	?	?	?	?	?
	Indore . . . . .	1,823	28.023	-.016	29.807	28.317	27.671	.646	.250	73.3	88.7	+1.3	63.6	0	76.3	+0.6	25.1	107.1	42.1	65.0	38.6
	Neemuch . . . . .	1,630	28.215	-.009	29.817	28.535	27.832	.703	.251	73.3	89.8	+1.3	65.7	+1.5	77.9	+1.4	24.1	109.1	41.0	68.1	38.1
GUZERAT .	Surat . . . . .	36	29.831	-.027	29.810	30.107	29.465	.642	.228	76.2	92.1	+0.9	70.0	+1.1	81.1	+1.0	22.1	111.0	51.1	59.9	34.0
N.-W. P., WEST .	Agra . . . . .	555	29.266	-.014	29.792	29.663	28.835	.828	.281	73.7	91.2	+0.5	68.6	+1.3	79.9	+0.9	22.8	115.5	41.6	73.9	37.1
	Jhansi . . . . .	840	28.935	-.017	29.778	29.359	28.538	.821	.274	77.0	92.4	+1.8	70.5	+2.5	81.5	+2.1	22.0	114.5	47.9	66.6	36.1
IX.—Deccan.			...	...	-.013	...	...	...	...	...	89.6	+0.6	67.6	+0.9	78.3	+0.7	22.2	...	...	2.1	34.1
BOMBAY, DECCAN .	Belgaum . . . . .	2,524	27.365	-.016	29.827	27.554	27.129	.425	.183	70.5	83.4	-1.0	64.0	+0.1	73.7	-0.5	19.4	104.8	52.9	51.9	30.4
	Sholapur . . . . .	1,590	28.292	-.006	29.829	28.542	28.031	.511	.204	75.9	92.7	+0.1	68.0	+0.5	80.4	+0.3	24.6	111.2	49.1	62.1	36.3
	Poona . . . . .	1,840	28.043	-.013	29.840	28.280	27.765	.515	.198	72.7	89.7	+1.2	65.2	+0.1	77.5	+0.7	24.5	109.1	47.0	62.1	36.6
	Bijapur . . . . .	1,946	27.934	?	29.807	28.160	27.690	.470	.183	74.9	83.8	?	70.9	?	77.4	?	13.0	98.3	46.1	52.2	27.0
KHANDESH .	Malegaon . . . . .	1,430	28.444	-.008	29.837	28.722	28.134	.588	.223	74.3	91.5	+0.6	61.2	+1.5	78.9	+1.1	25.3	109.3	43.9	65.4	37.7
	Ahmednagar . . . . .	2,152	27.731	?	29.834	27.969	27.449	.520	.205	72.7	88.1	?	63.5	?	75.8	?	24.7	107.2	39.9	67.3	36.7
BERAR .	Amraoti . . . . .	1,215	28.626	-.011	29.801	28.940	28.318	.622	.234	75.8	?	?	70.1	+1.9	?	?	?	?	?	?	?

\* Was 744 feet previous to 14th January 1892.

I.—contd.

at 165 Stations in India, Burma, etc., in the year 1892.—contd.

Calm.	WIND DIRECTION.									WIND VELOCITY.			HYGROMETRY 8 A.M.		Mean cloud amount of year.	RAINFALL.						STATION.	METEOROLOGICAL PROVINCE OR DISTRICT.	
	Number of winds from									Mean velocity in miles per hour.	Normal.	Percentage variation.	Mean humidity of year.	Mean vapour tension of year.		Number of rainy days during year.	Normal number of rainy days.	Variation.	Rainfall of year.	Normal rainfall of year.	Variation from normal of year.			Heaviest rainfall in 24 hours during year.
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.																
108	4	3	19	49	7	42	123	11		2.9	3.3	-12	59	.511	3.1	42	33.74	+8.26	25.56	30.00	-4.44	2.10	Dehli . . . . .	PUNJAB, CENTRAL.
170	18	14	37	51	23	8	25	20		2.3	2.3	0	63	.491	2.7	33	28.26	+4.74	23.51	21.15	+2.36	3.89	Lahore.	
243	7	5	15	42	16	1	24	14		1.3	1.5	-13	64	.516	3.5	43	37.00	+6.00	41.19	31.12	+10.07	5.68	Ludhlana . . . . .	PUNJAB, SUBMONTANE.
191	37	19	72	13	6	...	19	9		1.6	1.8	-11	63	.490	2.2	36	38.36	-2.36	35.65	30.62	+5.03	6.40	Sialkot . . . . .	PUNJAB, NORTH.
189	15	34	11	31	6	8	7	65		2.3	2.0	+15	64	.436	2.5	32	46.81	-14.81	26.54	33.01	-6.47	3.19	Rawalpindi.	
...	...	...	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	15.65	9.86	+5.7	...	VII.—Indus Valley and North-West Rajputana.	
108	28	25	20	27	39	47	31	41		3.8	3.4	+12	61	.456	2.7	17	21.56	-4.56	24.53	12.53	+12.00	5.94	Peshawar . . . . .	PUNJAB, WEST.
148	28	67	56	9	9	15	16	18		3.8	?	?	50	.416	2.2	20	16.40	+3.60	16.62	10.40	+6.22	4.11	Khushab.	
80	22	35	41	54	56	36	19	23		5.5	?	?	57	.517	2.4	23	15.70	+7.30	15.85	9.90	+5.95	2.33	Montgomery.	
201	14	58	29	8	4	11	7	36		1.2	1.7	-29	61	.491	2.0	16	14.73	+1.27	13.08	7.84	+5.24	2.91	D. I. Khan.	
76	9	90	3	76	3	77	1	31		2.2	2.3	-4	58	.505	1.6	23	11.72	+11.28	18.71	6.35	+12.36	6.87	Mooltan.	
84	30	7	35	40	30	35	81	24		5.3	3.8	+39	64	.536	3.8	33	23.39	+9.61	23.81	14.84	+8.97	2.50	Sirsa.	
114	17	17	35	82	29	19	4	49		4.0	3.3	+21	49	.471	2.2	11	6.63	+4.37	4.63	3.67	+0.96	0.81	Jacobabad . . . . .	SIND AND CUTCH.
...	2	134	...	15	6	180	17	12		8.5	10.2	-17	56	.527	4.0	13	10.14	-2.86	10.67	7.85	+2.82	2.58	Hyderabad.	
2	16	118	11	3	3	102	98	13		11.2	13.3	-16	73	.693	3.4	11	9.73	+1.27	11.96	7.77	+4.19	3.62	Kurrachee.	
57	20	13	6	3	5	63	143	49		11.3	?	?	?	?	2.9	18	?	?	10.98	14.78	-3.80	2.62	Bhuj.	
10	22	38	17	34	56	150	17	22		5.9	?	?	49	.471	2.6	23	?	?	18.85	12.15	+6.70	4.81	Bickaneer . . . . .	RAJPUTANA, WEST.
194	6	16	5	16	33	70	7	18		?	?	?	58	.519	3.8	27	?	?	18.09	10.28	+7.81	6.25	Pachpadra.	
...	...	...	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	39.19	32.27	+5.7	...	VIII.—East Rajputana, Central India and Guzerat.	
71	30	30	40	13	9	19	65	89		3.9	5.0	-22	58	.508	3.4	56	38.70	+17.30	55.27	27.53	+27.74	6.41	Jeypore . . . . .	RAJPUTANA, EAST.
77	36	26	13	16	16	14	120	48		7.3	6.7	+9	59	.489	3.0	42	32.56	+9.44	39.95	22.48	+17.47	5.55	Sambhar.	
107	12	23	3	4	6	33	134	44		6.2	4.4	+41	63	.522	2.5	37	32.99	+4.01	20.87	22.66	-1.79	2.02	Ajmere.	
...	15	59	54	34	35	52	76	41		?	?	?	58	.539	4.1	43	28.81	+14.19	39.32	25.77	+13.55	5.87	Deesa.	
70	16	36	24	6	3	57	116	38		8.2	8.8	-7	74	.669	2.6	42	33.94	+8.06	28.87	30.26	-1.39	2.89	Rajkot . . . . .	KATHIAWAR.
55	86	47	1	9	9	34	89	36		7.8	?	?	70	.687	3.8	30	?	?	69.96	?	?	2.43	Veraval.	
...	21	15	1	7	16	200	63	43		11.1	?	?	77	.754	3.2	37	?	?	22.14	?	?	1.91	Bhavnagar.	
70	20	12	34	6	9	30	156	29		2.8	2.3	+22	66	.561	3.3	49	49.75	-0.75	45.47	45.30	+0.17	5.22	Nowgong . . . . .	CENTRAL INDIA.
82	36	15	20	23	12	47	82	49		3.7	4.2	-12	65	.551	3.1	56	48.00	+8.00	35.36	36.24	-0.88	3.36	Indore.	
49	5	60	33	5	3	80	95	36		9.3	10.0	-7	57	.497	2.1	47	39.18	+7.82	36.02	32.03	+3.99	6.58	Neemuch.	
...	37	39	10	17	19	122	41	81		?	?	?	77	.733	3.3	60	49.36	+10.64	55.15	43.34	+11.81	3.70	Surat . . . . .	GUZERAT.
32	...	20	2	62	1	102	3	144		4.3	4.3	0	63	.542	2.6	40	38.91	+1.09	21.81	30.18	-8.37	2.97	Agra . . . . .	N.-W. P., WEST.
109	28	14	4	8	17	104	23	59		2.6	3.4	-24	57	.508	2.2	51	49.07	-8.07	39.29	39.18	+0.11	3.25	Jhansi.	
...	...	...	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	48.34	38.23	+9.21	...	IX.—Deccan.	
94	7	13	46	34	15	52	83	22		?	?	?	73	.547	4.8	90	83.08	+6.92	64.28	47.50	+16.76	5.00	Belgaum . . . . .	BOMBAY, DECCAN.
10	15	24	46	62	15	50	74	68		11.6	9.0	+29	60	.536	4.6	57	51.01	+5.99	39.40	35.02	+4.38	3.38	Sholapur.	
138	...	11	25	11	1	28	109	43		8.8	10.0	-12	65	.528	4.4	67	49.36	+17.64	50.91	28.05	+22.86	5.87	Poona.	
10	6	18	28	67	9	81	93	54		7.7	?	?	68	.594	4.9	60	43.52	+16.48	31.74	27.20	+4.54	1.75	Bijapur.	
37	14	18	5	3	6	65	142	76		8.0	7.3	+10	70	.615	3.6	42	40.57	+1.43	36.91	27.50	+9.41	4.77	Malegaon . . . . .	KHANDESH.
56	53	37	16	35	18	37	54	62		6.9	?	?	73	.596	3.7	61	?	?	43.60	26.33	+17.27	5.01	Ahmednagar.	
30	7	67	69	12	8	38	104	31		5.8	4.6	+26	59	.518	3.5	64	50.99	+13.01	47.93	36.98	+10.95	4.40	Amraoti.	BERAR.

Table

Abstract of Observations taken at 8 A.M.

METEOROLOGICAL PROVINCE OR DISTRICT.	STATION.	Elevation of bar-cistern above sea level in feet.	PRESSURE, 8 A.M., IN INCHES.							TEMPERATURE OF AIR.											
			Mean actual pressure (reduced to 32°) of year.	Variation from normal.	Mean pressure of year reduced to sea level and to constant gravity 45° Lat.	Highest pressure recorded during year.	Lowest pressure recorded during year.	Absolute range during year.	Mean monthly range of pressure.	Mean of 8 A.M. of year.	Mean maximum of year.	Variation from normal of year.	Mean minimum of year.	Variation from normal of year.	Mean daily temperature of year.	Variation from normal of year.	Mean daily range of temperature.	Highest temperature observed during year.	Lowest temperature observed during year.	Absolute range during year.	Mean monthly absolute range.
CENTRAL PROVINCES, WEST.	Khandwa . . .	1,044	28.810	-.001	29.825	29.098	28.468	.630	.245	73.2	91.6	+0.3	67.4	+1.0	79.5	+0.6	24.2	110.2	43.1	67.1	38.9
	Hoshangabad . . .	1,020	28.828	-.020	29.820	29.149	28.473	.676	.249	73.4	90.5	+0.2	68.1	+1.5	79.3	+1.0	22.4	110.5	44.8	65.7	35.7
	Nagpur . . .	1,025	28.810	-.011	29.796	29.132	28.472	.660	.237	77.1	92.3	+0.5	69.7	+1.3	81.0	+0.9	22.7	114.9	50.2	64.7	34.4
CENTRAL PROVINCES, CENTRAL.	Seoni . . .	2,030	27.815	-.013	29.822	28.127	27.477	.650	.238	74.2	88.1	+0.4	65.1	+0.4	76.6	+0.4	23.0	109.2	44.0	65.2	34.8
	Jubbulpore . . .	1,327	28.504	-.007	29.806	28.828	28.054	.774	.258	71.8	89.2	+1.0	64.7	+0.4	77.0	+0.7	24.5	110.5	37.9	72.6	38.7
	Saugor . . .	1,762	28.069	-.018	29.795	28.382	27.670	.712	.247	73.2	89.8	+2.1	66.4	+0.9	78.1	+1.5	23.4	109.9	43.1	66.8	36.8
CENTRAL PROVINCES, EAST.	Sutna . . .	1,040	28.763	-.027	29.777	29.135	28.335	.800	.268	74.1	88.7	+0.9	65.1	0	76.9	+0.5	23.6	111.2	38.6	72.6	37.1
	HYDERABAD, NORTH.																				
	Aurangabad . . .	?	28.025	?	?	28.280	27.738	.542	.224	75.9	90.7	?	66.2	?	78.4	?	24.6	108.2	47.6	60.6	35.3
	Indur . . .	?	?	?	?	?	?	?	?	75.6	90.6	?	68.6	?	79.6	?	22.0	109.4	44.6	64.8	33.6
	Bidar . . .	?	27.710	?	?	27.951	27.459	.492	.204	74.8	87.3	?	68.5	?	77.9	?	18.7	105.4	55.2	50.2	29.5
HYDERABAD, SOUTH.	Gulburga . . .	?	28.365	?	?	28.610	28.120	.490	.202	75.5	91.1	?	68.2	?	79.7	?	22.9	109.3	50.5	58.8	36.2
	Raichur . . .	?	28.500	?	?	28.738	28.270	.468	.202	75.6	90.8	?	71.2	?	81.0	?	19.6	109.9	57.2	52.7	29.1
	Hyderabad (Deccan). . .	1,690	28.181	?	29.825	28.444	27.990	.514	.203	74.1	89.5	?	68.9	?	78.8	?	20.6	108.9	51.3	57.6	30.4
	Kamamet . . .	?	29.495	?	?	29.808	29.210	.598	.230	77.5	92.3	?	72.2	?	82.3	?	20.1	115.2	53.2	62.0	32.0
<b>X.—West Coast.</b>			...	...	-.022	...	...	...	...	...	86.0	+0.1	74.0	0	80.1	+0.1	12.0	...	...	30.3	19.3
KONKAN	Pombay . . .	37	29.848	-.023	29.825	30.085	29.527	.558	.223	78.4	85.3	-0.2	75.6	+1.0	80.5	+0.4	9.6	95.4	63.0	32.4	18.0
	Ratnagiri . . .	110	29.765	-.020	29.813	29.975	29.480	.495	.214	79.2	87.2	0	73.5	+0.7	80.4	+0.4	13.7	96.9	61.4	35.5	21.9
	Mormugoa . . .	60	29.839	?	29.834	30.030	29.569	.461	.190	77.7	86.4	?	74.7	?	80.6	?	11.7	96.0	64.3	31.7	19.8
	Karwar . . .	44	29.853	-.026	29.829	30.040	29.628	.412	.186	75.6	85.9	0	71.9	-0.6	78.9	-0.3	14.2	93.8	59.6	34.2	21.5
MALABAR	Mangalore . . .	26	29.890	-.022	29.848	30.052	29.695	.357	.160	77.9	86.7	+0.2	73.8	-0.2	80.3	0	13.0	95.3	64.5	30.8	20.7
	Calicut . . .	27	29.889	-.028	29.845	30.046	29.717	.329	.160	77.9	86.5	?	73.8	?	80.2	?	12.6	93.4	64.7	28.7	19.2
	Cochin . . .	10	29.916	-.012	29.854	30.062	29.750	.312	.153	78.7	87.3	+0.3	73.6	-0.9	80.5	-0.3	13.7	93.3	63.9	29.4	20.1
	Trivandrum . . .	198	?	?	?	?	?	?	?	77.8	83.0	?	75.4	?	79.2	?	7.7	89.0	69.0	20.0	13.5
<b>XI.—South India</b>			...	...	-.016	...	...	...	...	...	89.8	+0.3	72.4	-0.1	81.1	+0.1	17.4	...	...	46.8	27.3
MADRAS, SOUTH	Pamban . . .	37	29.862	?	29.826	30.066	29.660	.406	.172	81.3	86.6	?	77.9	?	82.3	?	8.7	94.3	70.2	24.1	16.6
	Madura . . .	447	29.446	-.018	29.830	29.660	29.240	.420	.177	80.7	83.2	-1.3	74.2	+0.7	83.7	-0.3	19.0	105.5	64.7	40.8	28.8
MADRAS, SOUTH CENTRAL.	Salem . . .	940	28.983	-.020	29.867	29.196	28.768	.428	.172	77.2	83.9	+1.3	71.4	+1.4	82.6	+1.4	22.5	107.5	57.9	49.6	31.9
	Coimbatore . . .	1,348	28.548	-.025	29.847	28.762	28.351	.411	.162	75.0	81.4	+1.3	69.2	-0.5	80.3	+0.4	22.2	100.8	57.0	43.8	29.5
COORG	Mercara . . .	3,781	26.216	?	29.860	26.350	26.058	.292	.132	65.6	76.1	-0.3	61.6	+0.4	68.8	+0.1	14.5	90.2	52.2	38.0	22.5
MYSORE	Bangalore Bazar . . .	2,982	26.979	-.016	29.877	27.172	26.799	.373	.157	69.8	84.4	+0.6	64.0	+0.2	74.2	+0.4	20.3	99.2	52.9	46.3	28.8
MADRAS, EAST-COAST, SOUTH.	Negapatam . . .	31	29.864	-.014	29.824	30.086	29.631	.455	.180	81.2	90.2	+0.8	75.7	+0.1	83.0	+0.4	14.5	106.7	65.2	41.5	25.6
	Cuddalore . . .	12	29.879	?	29.820	30.112	29.652	.460	.192	79.8	89.7	?	74.1	?	81.9	?	15.7	106.3	62.8	43.5	26.7
	Trichinopoly . . .	255	29.643	-.021	29.832	29.858	29.447	.411	.170	80.0	94.9	+1.1	74.6	+0.7	84.8	+1.0	20.3	108.7	62.9	45.8	30.4
	Madras . . .	22	29.867	-.021	29.820	30.120	29.639	.481	.192	80.4	90.8	+0.2	74.3	-0.6	82.6	-0.1	16.5	108.5	62.5	46.0	27.5
MADRAS, EAST COAST, CENTRAL.	Nellore . . .	71	29.796	?	29.801	30.078	29.539	.539	.215	81.0	94.0	?	74.7	?	84.4	?	19.3	115.7	62.1	53.6	30.1
	Masulipatam . . .	15	29.859	-.019	29.809	30.165	29.544	.621	.242	79.6	90.0	-3.4	74.0	-0.3	82.0	-0.4	16.0	114.7	57.7	57.0	29.6
MADRAS, CENTRAL	Cuddapah . . .	433	29.456	?	29.831	29.714	29.225	.489	.193	80.5	94.5	?	73.8	?	84.1	?	20.7	113.3	58.3	55.0	31.1
	Kurnool . . .	923	28.959	?	29.829	29.226	28.717	.509	.204	77.6	92.4	?	69.9	?	81.2	?	22.5	111.6	51.2	60.4	33.2
	Bellary . . .	1,475	28.415	+0.001	29.839	28.651	28.190	.461	.193	76.4	92.0	-1.2	70.0	-0.4	81.0	-0.8	22.3	108.5	53.0	55.5	31.4
MADRAS, EAST COAST, NORTH.	Rajahmundry . . .	112	29.749	?	29.796	30.042	29.434	.608	.220	78.9	92.2	?	73.7	?	83.0	?	18.5	116.1	58.9	57.2	29.8
	Cocanada . . .	26	29.839	?	29.800	30.152	29.495	.657	.241	78.7	88.8	?	73.6	?	81.2	?	15.2	112.4	59.7	52.7	26.2
	Vizagapatam . . .	31	29.825	-.018	29.794	30.150	29.432	.718	.239	80.1	85.0	-0.5	76.9	+0.6	81.0	0	8.0	97.9	62.9	35.0	15.6
	Gopalpur . . .	21	29.823	?	29.784	30.178	29.349	.829	.269	76.0	85.8	?	71.9	?	79.0	?	13.9	97.2	54.5	42.7	23.2

I.—contd.

at 165 Stations in India, Burma, etc., in the year 1892.—contd.

Calm.	WIND DIRECTION.								WIND VELOCITY.			HYGROMETRY 8 A.M.		Mean cloud amount of year.	RAINFALL.					STATION.	METEOROLOGICAL PROVINCE OR DISTRICT.			
	Number of winds from								Mean velocity in miles per hour.	Normal.	Percentage variation.	Mean humidity of year.	Mean vapour tension of year.		Number of rainy days during year.	Normal number of rainy days.	Variation.	Rainfall of year.	Normal rainfall of year.			Variation from normal of year.	Heaviest rainfall in 24 hours during year.	
	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.																
70	32	26	22	5	22	14	127	48	5.1	5.6	-9	63	.520	2.7	55	44.36	+10.64	45.44	33.74	+11.70	5.42	Khandwa . . .	CENTRAL PROVINCES, WEST.	
33	5	69	68	6	58	69	54	4	4.7	2.9	+62	67	.566	3.5	66	60.53	+5.47	53.25	58.41	-5.16	5.20	Hoshangabad.		
58	89	33	14	10	16	40	51	55	6.5	5.1	+27	60	.555	3.8	61	64.93	-3.93	44.11	51.00	-6.89	3.92	Nagpur.		
54	33	53	35	21	24	55	36	55	3.7	3.9	-5	63	.527	3.3	63	73.65	-10.65	53.60	57.37	-3.77	3.38	Seoni . . .	CENTRAL PROVINCES, CENTRAL.	
145	6	12	3	33	49	44	62	12	2.0	3.2	-38	68	.548	3.3	73	65.62	+7.38	55.40	58.55	-3.15	7.95	Jubbulpore.		
113	11	18	25	35	16	72	62	14	3.9	3.4	+15	59	.484	2.4	58	56.93	+1.07	48.22	44.35	+3.87	2.95	Saugor.		
48	72	18	11	11	25	9	116	56	5.8	6.2	-6	60	.508	2.4	52	52.91	-0.91	46.39	43.58	+2.81	5.72	Sutna . . .	CENTRAL PROVINCES, EAST.	
83	15	68	34	15	13	68	36	34	5.5	?	?	58	.516	3.1	64	?	?	43.73	32.27	+11.46	4.70	Aurangabad . . .	HYDERABAD, NORTH.	
47	28	8	25	44	30	44	63	77	8.7	?	?	69	.607	4.1	72	?	?	53.58	37.40	+16.18	5.32	Indur.		
...	35	50	24	29	29	91	64	42	7.6	?	?	69	.590	2.6	80	?	?	61.67	42.03	+19.64	5.06	Bidar.		
103	29	18	23	36	18	29	45	63	?	?	?	68	.610	4.6	67	?	?	44.22	29.19	+15.03	2.23	Gulburga . . .	HYDERABAD, SOUTH.	
15	10	16	34	50	47	71	76	47	8.7	?	?	68	.597	6.2	67	?	?	50.02	25.22	+24.80	3.33	Raichur.		
126	9	5	22	28	12	6	136	22	5.7	?	?	72	.604	4.1	59	?	?	50.30	32.94	+17.36	3.84	Hyderabad (Decan).		
130	22	5	5	57	52	27	46	22	?	?	?	77	.732	2.6	65	?	?	52.43	?	?	3.93	Kamamet.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	131.46	112.69	+25.57	...		X.—West Coast.
...	32	77	73	40	38	35	53	18	10.9	12.1	-10	79	.773	4.3	92	76.63	+15.37	95.11	78.31	+16.80	5.53	Bombay . . .	KONKAN.	
72	37	17	42	66	39	44	30	23	7.3	10.1	-28	73	.732	4.1	107	97.80	+9.20	149.59	110.33	+39.26	8.95	Ratnagiri.		
22	39	18	69	67	26	30	37	48	9.1	?	?	83	.816	4.5	113	?	?	152.54	?	?	10.60	Mormugoa.		
72	36	132	22	2	1	58	37	6	2.8	?	?	82	.747	4.2	134	109.07	+24.93	160.13	128.66	+31.47	7.29	Karwar.		
94	34	56	103	15	3	19	32	10	2.6	3.5	-26	83	.786	5.2	141	128.30	+22.70	142.80	125.67	+17.13	7.25	Mangalore . . .	MALABAR.	
47	47	89	92	26	8	7	11	39	12.2	?	?	83	.792	5.3	135	113.90	+21.10	146.55	112.39	+34.16	5.99	Calicut.		
24	16	191	50	20	7	5	23	29	5.4	?	?	81	.803	4.9	146	132.18	+13.82	135.38	120.81	+14.57	5.20	Cochin.		
...	103	51	42	9	3	6	37	115	7.0	?	?	85	.810	5.9	95	?	?	69.55	?	?	4.55	Trivandrum.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	43.11	44.56	-1.45	...		XI.—South Indi.
12	59	51	27	24	49	84	35	25	8.3	?	?	79	.848	3.6	28	33.10	-5.10	16.16	37.00	-20.84	2.18	Pamban . . .	MADRAS, SOUTH.	
21	115	48	4	10	9	21	6	132	2.8	4.3	-35	68	.717	3.7	41	43.71	-2.71	31.98	30.32	+1.66	3.01	Madura.		
104	11	59	10	8	85	73	13	3	3.7	4.5	-18	75	.716	4.3	65	66.50	-1.50	37.23	43.98	-6.75	2.36	Salem . . .	MADRAS, SOUTH CENTRAL.	
...	67	20	55	4	108	60	29	3	5.1	4.7	+9	86	.750	5.0	36	51.20	-9.20	14.89	21.89	-7.00	1.48	Coimbatore.		
...	50	16	110	...	2	1	157	30	5.8	5.7	+2	84	.536	6.5	192	137.20	+4.80	119.72	135.27	-15.55	6.25	Mercara . . .	COORG.	
...	11	57	58	22	21	101	90	6	4.4	5.5	-20	80	.597	5.9	63	61.68	+1.32	26.75	36.93	-10.18	1.88	Bangalore Bazar . . .	MYSORE.	
51	15	26	11	7	31	47	114	64	7.5	5.6	+34	74	.785	5.9	46	60.74	-14.74	31.79	58.93	-27.14	3.15	Negapatam . . .	MADRAS, EAST COAST, SOUTH.	
...	69	14	7	6	34	52	92	92	3.3	?	?	86	.886	3.3	47	56.80	-9.80	39.70	53.15	-13.45	5.30	Cuddalore.		
42	41	50	12	7	12	40	116	41	5.8	5.9	-2	69	.712	5.2	37	45.45	-8.45	29.09	33.72	-4.63	2.81	Titchinopoly.		
13	62	26	11	19	64	68	55	28	6.8	7.3	-7	77	.792	5.0	59	60.53	-1.53	42.04	55.79	-13.75	3.12	Madras.		
50	5	1	8	63	17	9	79	134	6.8	?	?	77	.811	6.7	50	44.30	+5.70	40.61	39.02	+1.59	7.41	Nellore . . .	MADRAS, EAST COAST, CENTRAL.	
53	79	35	3	25	47	17	38	69	5.8	7.0	-17	85	.865	5.1	68	55.24	+12.76	65.00	42.19	+22.81	7.05	Masulipatam.		
...	12	39	54	60	14	72	74	41	?	?	?	66	.680	4.4	58	46.00	+12.00	45.72	32.59	+13.13	3.38	Cuddapah . . .	MADRAS, CENTRAL.	
318	...	...	...	1	...	13	25	9	?	?	?	70	.659	3.6	59	48.93	+10.07	38.23	28.57	+9.66	2.71	Kurnool.		
166	3	4	3	12	10	23	67	48	6.6	6.5	+2	67	.619	4.2	47	35.00	+12.00	23.54	18.78	+4.76	2.51	Bellary.		
53	127	28	16	5	31	5	84	17	?	?	?	75	.763	4.6	68	50.38	+17.62	51.82	38.56	+13.26	4.00	Rajahmundry . . .	MADRAS, EAST COAST, NORTH.	
16	115	27	7	18	6	52	66	59	7.9	?	?	77	.771	3.5	57	55.10	+1.90	57.14	40.14	+17.00	5.20	Cocanada.		
...	25	8	3	2	5	53	222	48	1.9	2.8	-32	73	.778	4.8	55	64.36	-9.36	59.59	47.72	+11.87	6.62	Vizagapatam.		
13	95	6	2	3	54	94	9	89	14.1	?	?	82	.760	1.7	61	61.35	-0.35	48.10	52.17	-4.07	3.75	Gopalpur.		

Table

Abstract of Observations taken at 8 A.M.

METEOROLOGICAL PROVINCE OR DISTRICT.	STATION.	Elevation of bar cistern above sea level in feet.	PRESSURE, 8 A.M., IN INCHES.							TEMPERATURE OF AIR.														
			Mean actual pressure (reduced to 32°) of year.	Variation from normal.	Mean pressure of year reduced to sea level and to constant gravity 45° Lat.	Highest pressure recorded during year.	Lowest pressure recorded during year.	Absolute range during year.	Mean monthly range of pressure.	Mean of 8 A.M. of year.	Mean maximum of year.	Variation from normal of year.	Mean minimum of year.	Variation from normal of year.	Mean daily temperature of year.	Variation from normal of year.	Mean daily range of temperature.	Highest temperature observed during year.	Lowest temperature observed during year.	Absolute range during year.	Mean monthly absolute range.			
<b>XII.—Hill Stations.</b>			...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
BALUCHISTAN . . .	Quetta . . .	5,502	24.624?	+0.023?	P	24.880	24.264	.616	.238	57.4	74.6	+1.3	44.4	-0.2	59.5	+0.6	30.2	98.6	21.8	76.8	46.6			
NORTHERN INDIA . . .	Srinagar . . .	5,204	24.869	P	P	25.179	24.456	.723	.308	51.3	68.2	P	44.6	P	56.5	P	23.6	95.4	21.1	74.3	41.5			
	Murree . . .	6,344	23.810	-0.011	P	24.043	23.531	.512	.248	57.1	67.4	+1.4	51.6	+0.6	59.5	+1.0	15.8	94.7	27.7	67.0	35.4			
	Simla . . .	7,224*	23.081	-0.013	P	23.252	22.811	.441	.225	55.1	62.9	P	51.3	P	57.1	P	11.5	85.3	28.8	56.5	26.6			
	Mussoorie . . .	P	23.539	P	P	23.767	23.237	.530	.239	57.0	66.3	P	51.9	P	59.1	P	14.4	92.3	30.0	62.3	29.9			
	Ranikhet . . .	6,069	24.068	0	P	24.281	23.777	.504	.218	59.7	69.8	+2.1	54.9	+1.9	62.4	+2.0	14.9	89.1	29.5	59.6	29.0			
	Gnatong . . .	P	19.237	P	P	19.391	18.893	.498	.183	P	P	P	26.5	P	P	P	P	P	P	P	P	P	P	
	Darjeeling . . .	7,421	22.947	P	P	23.137	22.718	.419	.230	51.8	57.3	-0.8	47.5	+0.8	52.9	0	9.7	71.6	29.3	42.3	19.4			
CENTRAL INDIA . . .	Mount Abu . . .	3,945	P	P	P	P	P	P	P	68.1	75.7	-0.8	62.6	+0.7	69.2	0	13.1	94.2	44.6	49.6	27.2			
	Pachmarhi . . .	3,511	26.432	-0.004	P	26.688	26.082	.606	.218	71.5	80.4	+1.4	61.7	+0.8	71.1	+1.1	18.8	98.7	35.8	62.9	32.0			
SOUTH INDIA . . .	Wellington . . .	6,200	24.255	+0.009	P	24.386	24.077	.309	.140	62.7	71.2	+0.7	53.0	-1.0	62.1	-0.2	18.3	81.2	35.7	45.5	28.6			
	Kodaikanal . . .	P	P	P	P	P	P	P	P	59.6	P	P	52.5	P	P	P	P	P	P	P	P	P	P	
<b>XIII.—Extra India</b>			...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
PERSIA . . .	Bushire . . .	14	29.845	P	P	29.815	30.312	29.365	.947	.315	75.8	83.2	P	69.7	P	76.5	P	13.5	111.5	43.8	67.7	32.5		
ARABIA . . .	Baghdad . . .	P	29.482	P	P	29.907	29.052	.855	.182	69.7	87.4	P	58.6	P	73.0	P	28.8	113.3	36.5	76.8	39.7			
	Aden . . .	94	29.804	P	P	29.830	30.075	29.439	.636	.198	80.7	88.0	P	77.0	P	82.5	P	10.8	101.1	65.3	35.8	21.4		
	Perim . . .	P	P	P	P	P	P	P	P	82.6	89.2	P	73.5	P	84.3	P	9.8	101.3	71.2	30.1	16.6			
ARABIAN SEA ISLANDS.	Minicoy . . .	10	29.930	P	P	29.866	30.069	29.772	.297	.148	P	P	P	P	P	P	P	91.2	72.8	18.4	P			
AFRICA . . .	Zanzibar . . .	73	29.977	P	P	29.977	30.170	29.739	.371	.158	78.7	83.6	P	76.4	P	80.0	P	7.2	89.0	70.1	18.9	12.2		

\* Hitherto erroneously given as 7,274 feet in the Monthly Weather Reviews for July and August and as 7,237 feet for September, October and November 1892.



*was then  
abstract by com. of  
with preceding  
years*

Table

Abstract of Observations recorded at 10 A.M. and 4 P.M.

METEOROLOGICAL PROVINCE.	STATION.	Elevation of barometers above sea level in feet.	PRESSURE.						TEMPERATURE OF AIR.									
			Mean of 10 hours.	Mean of 16 hours.	Mean daily range.	Mean daily pressure.	Variation from normal.	Mean reduced to S. L. and to gravity 45° Lat.	Mean maximum.	Mean minimum.	Mean daily range.	Highest maximum.	Lowest minimum.	Absolute range.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.
BURMA COAST AND BAY ISLANDS.	Port Blair	...	29'837	29'738	'098	29'784	-.026	29'776	88'8	77'0	9'9	93'8	69'9	23'9	83'4	84'3	80'8	+0'5
	Mergui	...	'823	'712	'111	'765	-.025	'792	86'6	?	?	94'4	?	?	81'3	83'0	?	?
	Rangoon	...	'863	'743	'120	'805	-.028	'784	?	72'3	?	?	56'5	?	80'9	84'5	?	?
	Diamond Island	...	'872	'770	'102	'818	-.020	'792	?	74'0	?	?	64'3	?	81'8	82'2	?	?
	Cocos Island	111	'813	'726	'087	'767	?	'811	86'2	?	?	?	?	?	83'2	82'2	?	?
	Akyab	...	'880	'769	'111	'825	-.012	'788	85'8	70'3	15'5	94'8	52'2	42'6	80'3	82'5	77'6	-0'9
ASSAM.	Silchar	...	'778	'651	'127	'716	-.024	'773	86'1	67'5	18'6	97'6	46'0	51'6	77'7	83'3	75'7	+0'2
	Sibsagar	...	'568	'430	'138	'488	-.022	'792	82'1	66'8	15'3	96'0	45'1	50'9	74'9	80'7	73'3	+1'0
	Dhubri	...	'749	'614	'136	'681	-.027	'753	82'9	68'3	14'6	97'1	50'0	47'1	75'5	81'4	74'3	+0'1
BENGAL AND ORISSA.	Chittagong	...	'800	'696	'104	'748	-.011	'784	85'1	69'3	15'8	95'2	50'0	45'2	80'3	81'5	76'4	+0'1
	Dacca	...	'839	'718	'121	'778	-.018	'749	86'9	70'4	16'4	99'8	49'5	50'3	80'3	83'8	78'2	+0'4
	Calcutta (Alipore)	...	'829	'710	'119	'767	-.018	'734	86'9	70'0	16'9	102'7	49'0	53'7	81'0	84'6	78'0	+0'2
	Do. (Chowringhee)	P	'835	?	?	?	?	?	88'6	70'4	18'1	105'0	48'9	56'1	82'6	?	?	?
	Saugor Island	...	'826	'713	'114	'767	-.016	'736	85'3	73'9	11'4	94'3	51'7	42'6	81'5	82'9	78'5	+0'2
	Burdwan	...	'753	'625	'128	'687	-.016	'735	90'2	?	?	108'7	?	?	81'2	87'0	?	?
	Berhampore	...	'775	'649	'126	'710	-.021	'726	88'6	70'0	18'6	108'7	48'1	60'6	80'4	86'0	78'3	+0'1
	Falee Point	...	'842	'731	'112	'787	-.020	'750	85'9	72'0	13'9	96'3	49'8	46'5	82'6	83'0	77'8	+0'1
	Cuttack	...	'770	'648	'122	'712	-.022	'735	91'7	72'2	19'6	112'4	51'9	60'5	84'5	89'0	80'5	+0'4
	GANGETIC PLAIN AND CHOTA NAGPUR.	Hazaribagh	...	27'822	27'731	'091	27'777	-.016	'732	86'0	66'0	20'0	108'9	44'7	64'2	79'5	82'7	75'0
Patna		...	29'640	29'518	'122	29'578	-.038	'715	87'5	68'7	18'8	109'7	44'4	65'3	82'3	86'6	77'6	+0'3
Darbhanga		...	'685	'557	'128	'620	-.014	'742	87'0	67'6	19'4	105'5	45'4	60'1	79'8	85'4	76'6	-0'1
Allahabad		...	'514	'393	'121	'449	-.032	'715	91'8	67'8	24'0	115'4	40'7	74'7	83'0	89'6	78'9	+1'1
Ghazipur		220	'617	'501	'117	'556	-.009	'736	91'0	69'2	21'8	111'2	42'5	68'7	82'8	87'8	79'0	+2'3
Lucknow		...	'438	'323	'115	'377	-.044	'709	90'9	65'9	25'0	112'3	37'0	75'3	82'1	88'0	78'4	+0'7
UPPER SUB-HIMALAYAS	Dehra Dun	...	27'592	27'509	'083	27'541	-.032	'741	83'4	61'6	21'9	108'4	39'0	69'4	75'1	78'9	71'2	+0'4
	Roorkee	...	28'915	28'809	'106	28'854	-.031	'717	88'6	62'9	25'8	113'5	34'8	78'7	77'9	85'7	74'7	+0'6
	Meerut	...	29'076	'972	'103	29'017	-.022	'727	88'5	64'2	24'3	111'2	37'5	73'7	79'4	85'7	75'5	+0'5
	Lahore	...	'092	29'001	'091	'040	-.035	'717	90'4	62'6	27'8	118'1	31'2	86'9	81'6	87'9	75'4	+2'1
INDUS VALLEY AND N.-W. RAJPUTANA.	Ludhiana	...	28'972	28'873	'099	28'915	-.050	'702	89'0	64'5	24'5	117'3	34'3	83'0	80'1	86'0	75'6	+1'7
	Peshawar	...	'726	'626	'100	'669	-.023	'775	87'5	60'5	26'9	117'0	30'9	86'1	77'6	84'8	72'8	+2'2
	Mooltan	...	29'373	29'276	'097	29'317	-.038	'709	83'8	66'9	26'9	120'3	39'1	81'2	80'4	91'7	79'4	+3'1
	Jacobabad	...	'630	'506	'124	'561	-.021	'707	87'6	65'5	32'1	121'2	34'0	87'2	86'9	94'9	80'4	+1'7
	Hyderabad (Sind)	...	'702	'600	'102	'650	-.030	'719	94'2	69'4	24'9	116'6	46'3	70'3	84'4	91'0	80'8	+0'5
	Kurrachee	...	'799	'702	'097	'749	-.035	'751	88'5	70'7	17'8	109'5	48'1	61'4	81'9	84'7	78'4	+1'2
EAST RAJPUTANA, CENTRAL INDIA AND GUZERAT.	Jeypore	...	28'413	28'309	'104	28'356	-.020	'746	91'1	66'3	24'8	113'5	42'1	71'4	82'8	88'0	77'4	+1'3
	Ajmere	...	'242	'142	'100	'189	-.022	'765	89'6	66'4	23'2	111'2	35'0	76'2	80'7	87'7	77'3	+2'5
	Deesa	...	29'388	29'274	'114	29'327	-.021	'750	95'3	68'3	27'0	114'7	44'2	70'5	85'0	92'8	81'3	+1'6
	Nowgong	...	'068	28'858	'110	'010	-.027	'727	90'1	?	?	112'6	?	?	81'6	87'4	?	?
	Agra	...	'279	29'174	'105	'218	-.019	'735	91'4	68'6	22'8	115'3	41'4	73'9	82'8	88'8	79'4	+1'6
DECCAN	Belgaum	...	27'375	27'268	'107	27'321	-.023	'767	83'5	64'0	19'5	104'8	52'7	52'1	76'7	79'7	72'4	-0'2

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II.

at 88 Stations in India, Burma, etc., in the year 1892.

TEMPERATURE, WET-BULB.				VAPOUR TENSION.					HUMIDITY.					CLOUD.				Total rainfall for the year.	STATION.	METEOROLOGICAL PROVINCE.
Mean minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.			
73.7	78.2	78.3	76.8	.792	.898	.890	.860	-.026	86	79	76	80	-2	6.3	6.4	6.4	+1.1	...	Port Blair.	BURMA COAST AND BAY ISLANDS.
P	75.7	76.6	?	P	.818	.833	?	?	P	76	74	P	P	5.9	6.8	6.3	+0.1	...	Mergui.	
70.1	75.2	75.2	73.5	.719	.805	.759	.761	-.023	89	76	66	77	-2	5.1	5.6	5.4	0	...	Rangoon.	
?	75.5	75.4	?	?	.806	.794	?	?	P	74	73	P	P	5.9	6.4	6.1	+1.3	...	Diamond Island.	
?	77.0	76.1	P	?	.852	.825	?	?	P	75	75	P	P	4.7	4.8	4.8	P	85.23	Cocos Island.	
68.4	75.0	75.7	73.0	.682	.813	.806	.767	-.004	88	77	72	79	0	4.8	4.2	4.5	-0.1	...	Akyab.	ASSAM.
66.2	72.4	73.7	70.8	.656	.746	.720	.707	-.004	93	77	63	78	-1	6.0	5.9	6.0	+0.7	...	Silchar.	
66.1	71.6	73.7	70.5	.669	.755	.762	.729	+0.027	97	85	71	84	0	6.7	5.9	6.3	-0.4	...	Sibsagar.	
66.6	70.9	72.6	70.0	.657	.717	.702	.692	+0.003	91	79	65	78	0	4.3	3.9	4.1	+0.2	...	Dhubri.	
67.9	74.5	74.7	72.4	.686	.794	.783	.753	+0.005	93	76	72	80	0	6.2	5.8	6.0	+1.5	...	Chittagong.	BENGAL AND ORISSA.
67.9	73.7	74.2	71.9	.679	.767	.738	.728	-.027	87	72	63	74	-3	5.3	5.0	5.1	+0.6	...	Dacca.	
67.9	73.0	73.0	71.3	.688	.749	.680	.706	-.049	89	67	57	71	-7	4.1	4.1	4.1	-0.3	...	Calcutta (Alipore).	
68.9	74.9	?	?	.720	.790	?	?	?	92	69	?	?	?	?	?	?	?	49.72	Do. (Chowringhee).	
?	75.8	75.8	?	?	.838	.819	?	?	?	75	71	?	?	5.1	4.8	5.0	+0.3	...	Saugor Island.	
67.5	71.2	72.1	70.2	?	.662	.614	?	?	?	60	48	?	?	4.1	4.4	4.3	-0.1	...	Burdwan.	GANGETIC PLAIN AND CHOTA NAGPUR.
66.7	72.9	73.3	71.0	.649	.742	.679	.690	-.002	83	69	55	69	-5	4.2	4.2	4.2	-0.7	...	Berhampore.	
70.7	75.7	75.9	74.1	.765	.816	.817	.799	+0.004	94	72	70	79	-2	4.4	4.4	4.4	-0.3	...	False Point.	
69.6	73.9	74.4	72.6	.717	.717	.675	.703	-.020	88	62	50	66	-4	3.6	4.2	3.9	-0.2	...	Cuttack.	
59.7	65.6	66.0	63.8	.469	.485	.454	.469	-.013	69	49	43	54	-3	4.3	4.8	4.6	0	...	Hazaribagh.	
64.9	71.6	72.3	69.6	.610	.667	.634	.637	+0.012	80	59	50	63	-2	3.3	3.3	3.3	-0.8	...	Patna.	
65.9	71.3	72.4	69.9	.658	.684	.648	.664	-.008	91	64	52	69	-2	2.6	2.4	2.5	-0.4	...	Darbhanga.	
62.0	69.2	70.0	67.1	.528	.563	.499	.530	-.044	73	50	38	54	-7	3.2	3.4	3.3	+0.1	...	Allahabad.	
64.6	71.1	71.4	69.1	.594	.634	.578	.603	+0.041	78	55	45	59	+3	2.8	2.6	2.7	-0.2	37.74	Ghazipur.	
?	69.2	70.2	?	?	.575	.529	?	?	?	52	41	?	?	3.1	3.2	3.1	-0.4	...	Lucknow.	
56.3	63.3	64.4	61.3	.421	.461	.449	.444	?	73	53	47	57	?	3.2	3.7	3.5	-0.4	...	Dehra Dun.	UPPER SUB-HIMALAYAS.
58.1	66.3	67.9	64.0	.469	.528	.475	.490	0	77	55	39	57	-1	3.3	3.3	3.3	+0.3	...	Roorkee.	
60.7	66.2	67.8	64.9	.536	.504	.474	.505	-.008	83	49	39	57	-1	2.8	2.9	2.9	-0.1	...	Meerut.	
57.2	66.2	67.7	63.7	.451	.481	.443	.458	-.027	74	44	35	51	0	2.7	2.8	2.8	+0.2	...	Lahore.	
60.0	66.5	68.1	64.9	.508	.510	.482	.500	-.001	78	50	40	56	-2	3.6	3.7	3.6	+0.2	...	Ludhiana.	
54.0	63.5	65.7	61.1	.381	.452	.432	.422	-.004	66	47	35	49	-4	2.4	3.9	3.2	+0.1	...	Peshawar.	INDUS VALLEY AND N.-W. RAJPUTANA.
?	67.9	73.5	?	?	.566	.627	?	?	?	51	40	?	?	1.5	1.8	1.7	0	...	Mooltan.	
57.0	67.2	68.5	64.2	.407	.448	.378	.409	-.053	58	34	23	39	-5	2.0	2.2	2.1	+0.2	...	Jacobabad.	
62.5	66.8	68.8	66.0	.520	.461	.439	.473	-.053	65	36	29	43	-7	4.8P	4.5P	4.6P	+3.0P	...	Hyderabad (Sind).	
65.9	72.5	74.9	71.1	.623	.706	.755	.695	+0.032	75	62	62	67	0	2.8	2.5	2.6	-0.6	...	Kurrachee.	
58.7	66.9	68.1	64.6	.442	.490	.464	.465	+0.001	62	44	37	48	-2	3.3	4.0	3.7	+0.3	...	Jeypore.	EAST RAJPUTANA, CENTRAL INDIA AND GUZERAT.
61.9	67.6	70.7	66.7	.547	.542	.565	.549	+0.070	78	51	43	58	+7	2.6	3.1	2.9	+0.1	...	Ajmere.	
60.4	68.6	69.9	66.3	.470	.507	.442	.473	-.012	59	43	31	44	-1	3.7	4.0	3.8	+0.4	...	Deesa.	
?	69.0	70.8	?	?	.569	.558	?	?	?	53	45	?	?	3.2	4.0	3.6	-0.5	...	Nowgong.	
61.4	69.0	71.1	67.2	.495	.561	.551	.536	+0.034	66	50	42	53	+2	2.6	2.9	2.8	+0.1	...	Agra.	
61.5	66.1	67.0	64.9	.529	.518	.513	.520	-.003	87	58	54	67	+4	4.5	5.1	4.8	+0.1	...	Belgaum.	DECCAN.

Table

Abstract of Observations recorded at 10 A.M. and 4 P.M. at 88

METEOROLOGICAL PROVINCE.	STATION.	Elevation of bar-cistern above sea level in feet.	PRESSURE.					TEMPERATURE OF AIR.											
			Mean of 10 hours.	Mean of 16 hours.	Mean daily range.	Mean daily pressure.	Variation from normal.	Mean reduced to S. L. and to gravity 45° Lat.	Mean maximum.	Mean minimum.	Mean daily range.	Highest maximum.	Lowest minimum.	Absolute range.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	
DECCAN—contd.	Sholapur . . .	...	28'296	28'157	'138	28'228	-.021	29'755	93'0	68'0	25'0	111'0	49'0	62'0	83'0	89'9	79'3	+0'3	
	Poona . . .	...	'045	27'931	'114	27'991	-.022	'771	89'8	65'2	24'6	109'1	47'0	62'1	81'5	85'8	76'5	+0'7	
	Buldana . . .	2,132	27'741	'631	'110	'682	-.022	'742	88'0	68'6	19'5	106'3	52'3	54'0	80'9	85'1	77'7	+0'7	
	Khandwa . . .	...	P	P	?	?	P	?	91'8	67'4	24'4	110'2	43'2	67'0	82'8	89'4	78'8	+0'8	
	Hoshangabad . . .	...	28'838	28'713	'124	28'772	-.027	'752	90'6	68'0	22'5	110'5	44'6	65'9	81'6	89'2	78'7	+0'6	
	Nagpur . . .	...	'819	'688	'131	'751	-.015	'728	92'3	69'9	22'5	114'9	50'0	64'9	84'1	89'6	80'5	+1'0	
	Sironcha . . .	401	29'466	29'334	'132	29'397	-.039	'744	93'3	71'9	21'4	116'1	49'1	67'0	83'7	90'8	82'1	+0'4	
	Chanda . . .	634	'224	'092	'133	'155	-.017	'735	92'8	68'7	24'1	114'4	44'8	69'6	83'9	90'4	80'3	+0'5	
	Seoni . . .	...	27'826	27'721	'105	27'771	-.013	'736	88'2	65'4	22'7	109'2	43'8	65'4	81'7	84'8	76'1	+1'0	
	Jubbulpore . . .	...	28'515	28'396	'119	28'452	-.010	'740	89'4	64'7	24'7	110'3	38'1	72'2	80'6	86'7	76'1	+0'6	
	Saugor . . .	...	'082	27'974	'108	'028	-.008	'736	89'8	66'3	23'5	110'0	43'1	66'9	82'4	87'4	77'2	+1'4	
	Sutna . . .	...	'776	28'662	'114	'716	-.030	'721	88'9	65'1	23'8	111'4	38'6	72'8	82'6	87'4	76'2	+0'2	
	Sambalpur . . .	463	29'356	29'231	'125	29'297	-.017	'708	91'9	69'3	22'6	117'3	46'4	70'9	83'9	89'4	79'8	-0'6	
	Secunderabad . . .	1,787	28'096	27'971	'125	28'036	-.015	'756	90'8	68'5	22'2	109'7	50'9	58'8	81'8	87'4	78'4	+0'1	
Hyderabad (Deccan)	...	'193	28'070	'123	'132	?	'759	89'4	68'9	20'5	109'0	51'1	57'9	81'5	86'8	78'6	?		
WEST COAST	Bombay . . .	...	29'845	29'741	'104	29'801	-.022	'778	85'7	75'5	10'2	95'4	63'0	32'4	81'2	83'1	79'9	+0'4	
	Ratnagiri . . .	...	'774	'675	'099	'720	-.027	'768	87'3	73'6	13'7	96'9	60'8	36'1	84'1	83'6	79'5	+0'3	
	Karwar . . .	...	'865	'769	'096	'813	-.019	'789	86'1	72'0	14'1	93'8	59'9	33'9	80'8	83'4	78'3	-0'3	
	Cochin . . .	...	'925	'822	'103	'869	-.016	'807	87'5	73'7	13'8	93'3	63'9	29'4	83'0	84'3	80'4	+0'1	
SOUTH INDIA	Salem . . .	...	28'989	28'844	'145	28'926	-.027	'801	94'1	71'3	22'8	107'3	58'1	49'2	83'3	90'1	80'8	+1'3	
	Mercara . . .	...	26'227	26'130	'097	26'179	-.029	'825	76'1	61'6	14'5	90'4	52'2	38'2	69'6	72'0	67'7	0	
	Trichinopoly . . .	...	29'649	29'510	'138	29'588	-.023	'774	95'2	74'6	20'6	108'8	62'8	46'0	85'8	91'6	83'1	+1'1	
	Madras . . .	...	'875	'768	'107	'825	-.017	'800	90'8	74'3	16'5	108'4	62'6	45'8	85'7	85'6	81'3	-0'5	
	Bellary . . .	...	28'419	28'286	'133	28'356	-.011	'767	92'2	70'0	22'2	108'5	53'2	55'3	83'0	89'0	79'9	-0'7	
Vizagapatam . . .	...	29'836	29'722	'114	29'779	-.017	'749	85'0	77'0	8'1	98'0	62'8	35'2	83'8	84'9	82'8	+0'1		
HILL STATION, BALUCH-ISTAN.	Quetta . . .	...	24'632	24'554	'078	24'585	+0'06	?	74'8	44'4	30'4	98'7	21'7	77'0	66'3	71'8	58'9	+0'7	
	HILL STATIONS, NORTH-EERN INDIA.	Leh . . .	11,503	19'730	19'635	'095	19'688	+0'26	?	56'5	31'3	25'2	84'8	4'8	80'0	46'2	51'8	43'1	+2'0
		Srinagar . . .	...	24'886	24'789	'097	24'838	?	?	68'4	44'6	23'8	95'4	21'1	74'3	57'6	66'3	56'0	?
		Murree . . .	...	23'834	23'800	'034	23'809	-.014	?	67'5	51'6	15'9	94'9	27'7	67'2	61'7	63'3	58'5	+1'6
		Chamba . . .	3,005	26'863	26'773	'090	26'825	-.032	?	80'3	57'8	22'6	107'9	37'1	70'8	68'9	75'9	67'0	+1'7
		Kailang . . .	10,087	20'790	20'731	'059	20'768	+0'07	?	56'1	33'3	22'8	81'9	3'0	78'9	47'3	50'8	42'4	+1'4
		Simla . . .	...	23'102	23'052	'051	23'070	-.011	?	63'2	51'4	11'8	85'3	28'8	56'5	58'4	59'9	56'4	+0'7
		Chakrata . . .	7,052	'263	'204	'059	'226	0	?	?	51'3	?	?	28'6	?	61'7	61'5	?	?
		Ranikhet . . .	...	24'086	24'026	'060	24'044	-.008	?	69'8	55'0	14'8	89'2	29'5	59'7	64'3	66'6	61'5	+1'6
		Pithoragarh . . .	5,363	'736	'665	'071	'689	+0'11	?	74'5	55'5	19'0	95'1	33'8	61'3	67'0	72'4	64'4	+1'7
Katmandu . . .	4,388	25'598	25'507	'091	25'551	-.022	?	7'74	54'2	23'1	91'2	31'2	60'0	67'0	72'4	64'5	-0'6		
Darjeeling . . .	...	22'966	22'891	'075	22'928	-.016	?	57'3	47'5	9'8	71'4	29'3	42'1	54'5	55'5	52'3	+0'5		
Demagiri . . .	?	?	?	?	?	?	?	?	62'4	?	97'9	45'1	52'8	79'0	81'7	?	?		
Tura . . .	3,943	?	?	?	?	?	?	81'5	68'2	13'3	94'9	53'5	41'4	74'8	78'7	74'2	?		
HILL STATIONS, CENTRAL INDIA.	Mount Abu . . .	?	?	?	?	?	?	76'1	62'6	13'5	94'2	44'7	49'5	71'4	73'7	68'7	+0'3		
	Fachmarhi . . .	...	26'449	26'362	'088	26'403	-.004	?	80'5	61'7	18'8	98'9	35'8	63'1	75'0	77'6	70'5	+1'1	
	Chikalda . . .	3,642	315	'220	'095	'265	-.020	?	80'2	65'4	14'9	98'9	48'5	50'4	73'8	77'7	72'3	+1'1	
Makhla . . .	?	?	?	?	?	?	?	83'8	67'1	16'7	104'1	50'0	54'1	74'8	79'8	74'5	+1'4		

II—contd.

Stations in India, Burma, etc., in the year 1892—contd.

TEMPERATURE, WET-BULB.				VAPOUR TENSION.					HUMIDITY.					CLOUD.				Total rainfall for the year.	STATION.	METEOROLOGICAL PROVINCE.
Mean minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.			
62.4	68.9	70.2	67.1	.514	.540	.498	.517	+.029	72	50	39	54	+4	4.3	5.5	4.9	0	...	Sholapur	DECCAN—contd.
61.4	66.6	67.7	65.2	.516	.478	.462	.487	-.002	80	46	42	56	+3	4.1	4.9	4.5	-.01	...	Poona.	
60.3	66.0	66.5	64.3	.441	.467	.432	.446	-.029	63	47	40	50	-3	4.2	4.3	4.3	+0.2	47.40	Buldana.	
60.8	68.3	69.8	66.3	.484	.531	.498	.504	+.004	69	49	39	52	-1	3.0	3.5	3.3	-.01	...	Khandwa.	
61.9	69.4	71.4	67.6	.512	.589	.564	.555	+.033	71	56	44	57	+1	3.3	4.0	3.6	0	...	Hoshangabad.	
62.3	69.8	70.8	67.6	.495	.568	.530	.531	+.012	66	51	42	53	0	3.8	4.6	4.2	-.03	...	Nagpur.	
66.6	73.1	73.4	71.0	.609	.685	.602	.632	-.006	77	60	45	61	-2	3.6	4.3	3.9	+0.1	39.77	Sironcha.	
63.9	70.7	72.4	69.0	.559	.586	.566	.570	-.002	79	52	43	58	-1	3.4	4.2	3.8	-.06	54.78	Chanda.	
60.1	67.2	67.9	65.1	.481	.502	.485	.489	+.010	75	49	45	57	+2	3.3	3.9	3.6	-.03	...	Seoni.	
60.2	67.9	69.1	65.9	.518	.545	.510	.525	+.023	82	54	43	60	+3	3.1	3.8	3.5	-.05	...	Jubbulpore.	
59.6	66.8	67.9	64.8	.458	.485	.456	.466	+.014	68	46	39	51	0	2.8	3.6	3.2	+0.5	...	Saugor.	
59.6	67.0	67.7	64.8	.483	.496	.457	.479	+.022	74	46	38	53	+3	2.4	2.7	2.6	-.06	...	Sutna.	
64.9	72.2	73.1	70.1	.591	.655	.615	.621	-.037	80	57	48	61	-4	3.5	4.2	3.8	+0.2	75.05	Sambalpur.	
64.4	69.1	70.1	67.9	.566	.565	.530	.554	+.014	80	54	44	59	+1	4.1	4.9	4.5	+0.8	50.96	Secunderabad.	
?	69.7	70.2	?	?	.591	.543	?	?	?	57	45	?	?	3.8	4.5	4.2	?	...	Hyderabad (Deccan).	
71.3	74.7	75.8	73.9	.725	.784	.798	.769	-.010	80	73	70	75	-2	3.8	3.8	3.9	-.04	...	Bombay	WEST COAST.
70.1	74.9	76.3	73.8	.705	.754	.813	.757	+.018	83	66	71	74	+2	3.7	4.1	3.9	+0.9	...	Ratnagiri.	
69.7	74.1	75.5	73.1	.706	.760	.783	.749	-.014	89	72	69	77	-1	3.9	4.1	4.0	+0.2	...	Karwar.	
72.8	76.1	76.7	75.2	.782	.812	.820	.805	-.009	90	72	70	78	+4	4.4	5.0	4.7	0	...	Cochin.	
68.6	73.6	75.2	72.5	.671	.703	.681	.685	-.007	87	61	49	66	-2	4.6	6.0	5.3	+0.9	...	Salem	SOUTH INDIA.
59.4	64.1	64.9	62.8	.488	.540	.541	.523	-.013	88	75	71	78	-2	6.6	7.4	7.0	+0.5	...	Mercara.	
70.3	74.1	75.2	73.1	.690	.683	.653	.675	-.022	81	55	45	60	-4	4.8	5.6	5.2	-.06	...	Trichinopoly.	
P	.76.3	76.7	75.4	P	.783	.802	.805	+.032	P	64	45	75	+2	4.5	4.3	4.4	-.05	...	Madras.	
64.5	70.7	71.5	68.9	.549	.604	.557	.569	+.027	74	55	44	58	+5	4.5	5.5	5.0	+0.1	...	Bellary.	
70.5	75.1	76.0	73.9	.673	.776	.796	.744	-.025	71	65	65	67	-1	4.4	4.8	4.6	+0.7	...	Vizagapatam.	
40.3	50.4	52.1	47.6	.230	.222	.207	.221	-.032	73	35	27	45	-5	1.6	2.2	1.9	-.03	...	Quetta	HILL STATION, BALUCHISTAN.
27.7	36.2	39.5	34.5	.139	.148	.158	.148	+.016	74	45	41	53	+4	5.1	6.5	5.8	+0.4	4.24	Leh	HILL STATIONS, NORTHERN INDIA.
43.0	51.5	56.6	50.4	.290	.349	.385	.341	?	89	68	56	71	?	4.1	5.5	4.8	?	...	Srinagar.	
P	50.2	51.4	?	?	.268	.282	?	?	?	47	48	?	?	3.9	4.7	4.3	-.04	...	Murree.	
52.5	57.8	60.7	57.0	.363	.380	.380	.375	-.023	71	53	44	56	-3	4.3	5.6	4.9	+0.1	44.93	Chamba.	
31.1	39.3	40.5	37.0	.176	.199	.185	.186	+.004	82	55	48	61	-1	4.8	6.6	5.7	+0.1	21.99	Kailang.	
43.6	48.3	49.9	47.3	.224	.257	.279	.253	-.043	54	50	52	52	-8	4.3	5.1	4.7	-.03	...	Simla.	
45.8	51.7	51.9	49.8	.275	.300	.309	.295	?	67	53	55	59	-5	2.8P	3.0P	2.9P	-1.8P	79.37	Chakrata.	
P	55.2	56.7	?	?	.361	.377	?	?	?	58	56	?	?	4.0	4.2	4.1	-.03	...	Ranikhet.	
50.7	58.3	59.6	56.2	.343	.418	.398	.386	+.007	73	62	49	61	-3	3.7	4.1	3.9	-.05	37.52	Pithoragarh.	
52.9	60.4	62.6	58.6	.424	.478	.478	.461	+.016	91	69	58	73	+2	4.1	5.2	4.6	+0.1	58.04	Katmandu.	
46.1	52.1	53.1	50.5	.314	.382	.398	.365	+.013	89	86	86	87	+3	6.9	7.4	7.2	+0.7	...	Darjeeling.	
P	P	P	P	P	P	P	P	?	?	?	?	?	?	P	P	P	P	96.50	Demagiri.	
P	68.9	70.3	?	?	.660	.664	?	?	?	75	67	?	?	4.2	3.3	3.8	-.07	149.89	Tura.	
54.9	59.6	60.8	58.4	.362	.393	.402	.396	+.028	62	52	50	55	+4	3.3	3.6	3.5	-.03	...	Mount Abu	HILL STATIONS, CENTRAL INDIA.
55.2	61.3	62.0	59.5	.386	.403	.393	.393	-.019	69	49	45	54	-3	3.6	4.2	3.9	-.02	...	Pachmarhi.	
58.0	62.1	63.4	61.2	.412	.438	.430	.427	-.007	66	55	50	57	-2	4.4	5.0	4.7	+0.5	77.39	Chikalda.	
61.3	66.3	68.8	65.3	P	P	P	?	?	?	P	?	?	P	4.1	4.8	4.5	-.07	63.38	Makhla.	

Table

Abstract of Observations recorded at 10 A.M. and 4 P.M. at 88

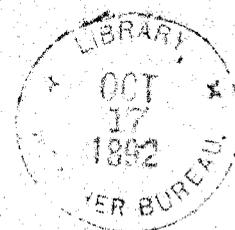
METEOROLOGICAL PROVINCE.	STATION.	Elevation of barometer above sea level in feet.	PRESSURE.						TEMPERATURE OF AIR.									
			Mean of 10 hours.	Mean of 16 hours.	Mean daily range.	Mean daily pressure.	Variation from normal.	Mean reduced to S. L. and to gravity 45° Lat.	Mean maximum.	Mean minimum.	Mean daily range.	Highest maximum.	Lowest minimum.	Absolute range.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.
HILL STATION, SOUTH INDIA. EXTRA INDIA	Wellington . . .	...	24.252	24.175	.077	24.214	-.010	?	71.3	52.9	18.3	81.2	38.4	42.8	66.7	66.1	61.9	+ 0.8
	Aden . . .	...	29.810	29.688	.121	29.749	-.033	29.774	88.0	77.0	11.0	101.1	65.3	35.8	83.3	85.5	81.9	- 0.1
	Perim . . .	...	?	?	?	?	?	?	89.4	79.4	9.9	101.3	71.2	30.1	85.4	86.0	83.6	?
	Minicoy . . .	...	.943	.848	.095	.893	?	.829	?	?	?	?	?	?	83.2	83.6		?
	Zanzibar . . .	...	.902	.879	.113	.936	?	.936	83.9	76.7	7.2	89.0	70.4	18.6	80.1	83.1	80.1	?

II—concl'd.

Stations in India, Burma, etc., in the year 1892—concl'd.

TEMPERATURE, WET-BULB.				VAPOUR TENSION.					HUMIDITY.					CLOUD.				Total rain-fall for the year.	STATION.	METEOROLOGICAL PROVINCE.
Mean minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	From minimum.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.	Mean 10 hours.	Mean 16 hours.	Mean daily.	Variation from normal.			
50·7	58·0	58·9	55·8	·355	·396	·428	·392	+·002	87	61	67	72	0	4·8	6·5	5·7	0	...	Wellington	HILL STATION, SOUTH INDIA. EXTRA INDIA.
70·6	74·9	74·5	73·4	·671	·764	·714	·717	-·031	72	67	58	66	-2	2·5	1·2	1·8	-0·8	...	Aden	
73·8	77·2	77·2	76·1	·766	·831	·823	·806	?	76	68	66	70	?	2·3	1·7	2·0	?	...	Perim.	
?	77·4	77·5	?	?	·864	·864	?	?	?	76	75	?	?	5·0	5·5	5·3	?	...	Minicoy.	
73·3	75·2	75·1	74·5	·778	·812	·767	·786	?	85	79	68	77	?	5·4	3·7	4·5	?	...	Zanzibar.	

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